JUN - 1 1947 Cub 80981

Occupational HAZARDS

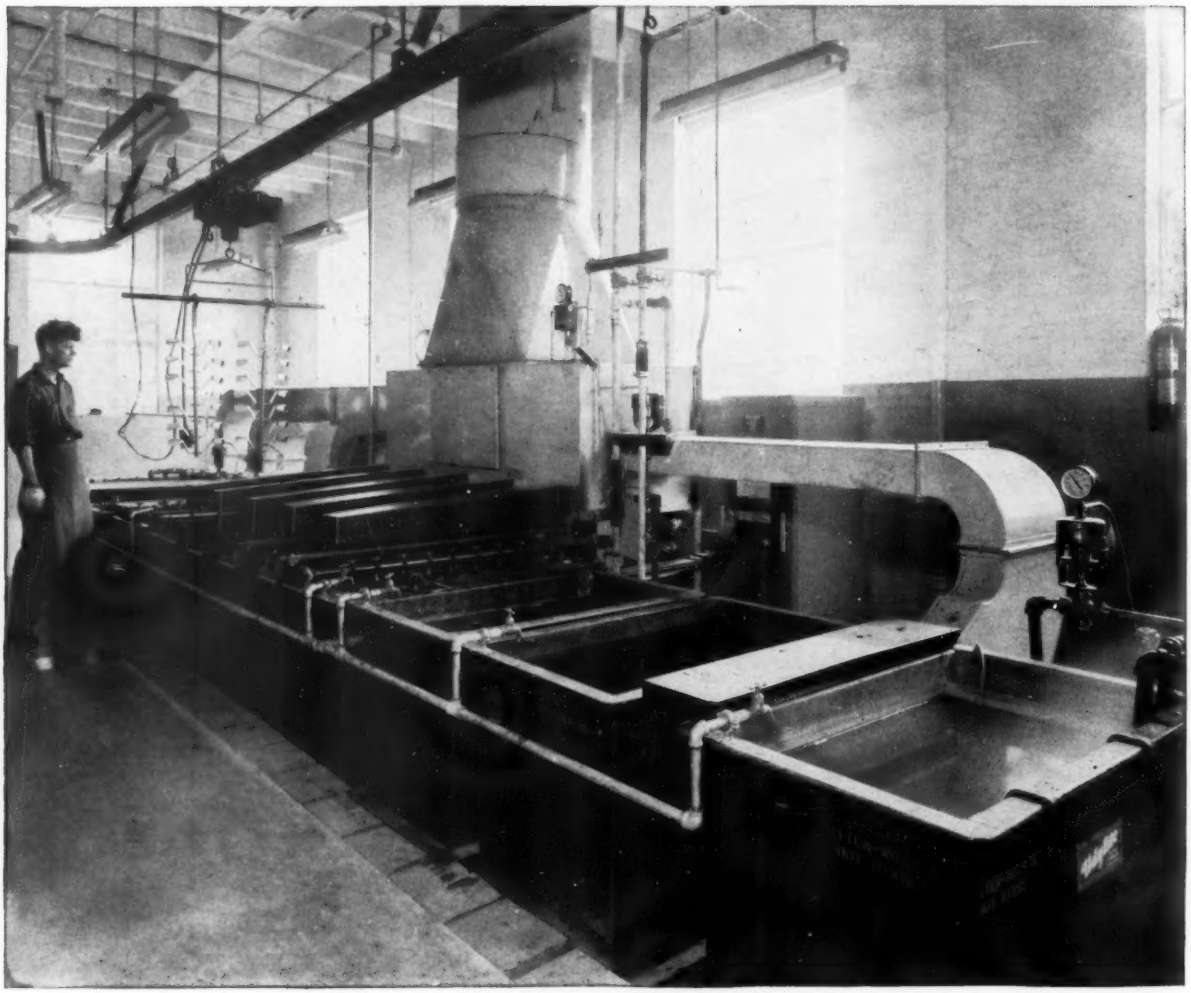
LIBRARY OF CONGRESS
SERIALS DIVISION
RECEIVED
PER.

THERE'S PROFIT IN PREVENTION

MAY
1947

ROUTE TO
OUR PLANT
E PROTECTION
EN: FEATURE
ECTION ON
E PROTECTION
R INDUSTRY

IN THIS ISSUE: PRESS-PROOFED PREVENTION . . . SAFETY DOUBLES IN BRASS . . . HEALTH PROGRAM FOR SMALL PLANTS . . . TRACKING DOWN HAZARDS



FOR HEALTH and EFFICIENCY . . .

KIRK AND BLUM Engineered Fume Control

● Irritating corrosive fumes stifle production and choke your plant's efficiency. Insufficient ventilation quickly lowers workers' ability and soon affects machinery and equipment.

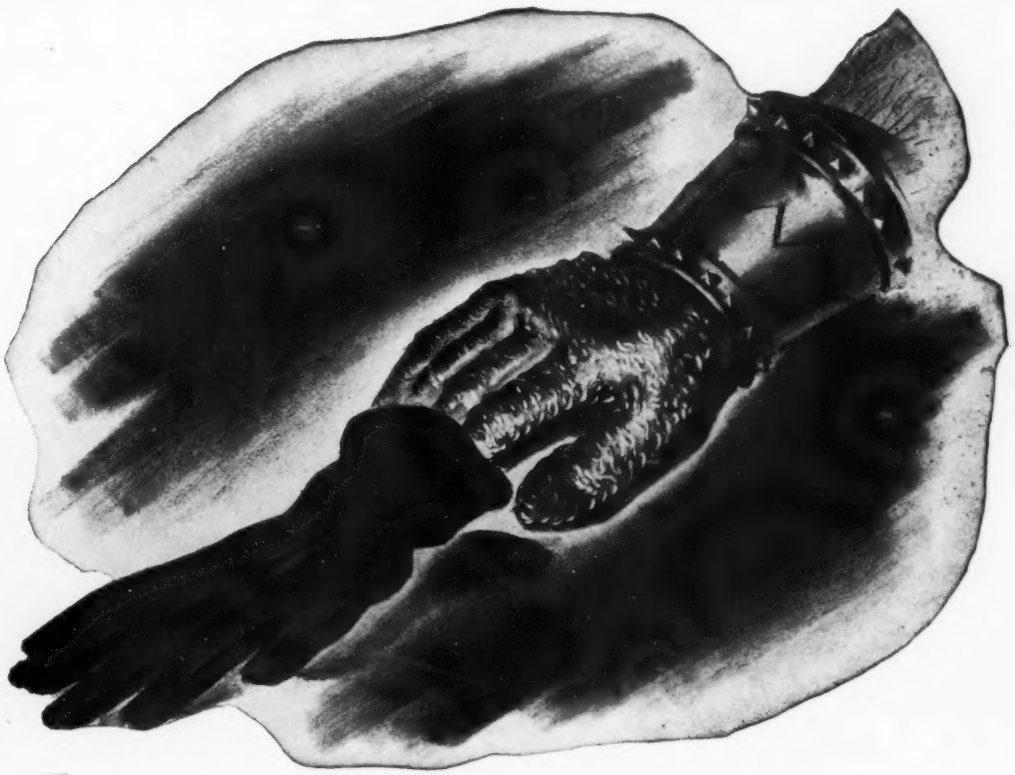
● If you have a concentration of fumes in your plant, call Kirk & Blum Engineers for a thorough, professional analysis . . . a solution of your problem.

● In the system illustrated above in the new plant of MacGregor Golf, Inc., Cincinnati, fumes are picked up from each of the tanks and exhausted at a high altitude. Exhaust ducts are designed for minimum interference with handling of parts, in or out of the tanks.

THE KIRK & BLUM MANUFACTURING CO.
2802 SPRING GROVE AVE. CINCINNATI 25, OHIO

ENGINEERING SPECIALISTS IN DUST AND FUME CONTROL

KIRK AND BLUM



HOW TO PUT A MAILED FIST INTO A *VELVET* GLOVE!

Valuable, work-wise hands are the flesh, bone and *skin* of industry.

Help keep them busy.

Take no chances with the surface *skin* especially.

Guard this skin against the annoying and profit-eating effects of industrial dermatitis due to specific skin irritants, such as chemicals and other materials.

Give it a *gentle glove of advance protection* with West Protective Creams.

Professional medical advice has determined that West Protective Creams are compounded with scientific accuracy to protect exposed skin areas to the fullest possible extent.

West Creams fall into six distinct types . . . and depending on the need, they supply either "skin surface" or "skin-penetrating" protection against every major specific irritant to which the human skin is sensitive.

West Protective Creams comprise part of a large list of "skin safeguards" developed in the West laboratories.

One of West's 475 technical safety consultants throughout the country will be glad to help solve your dermatitis problems.

WEST DISINFECTING Company

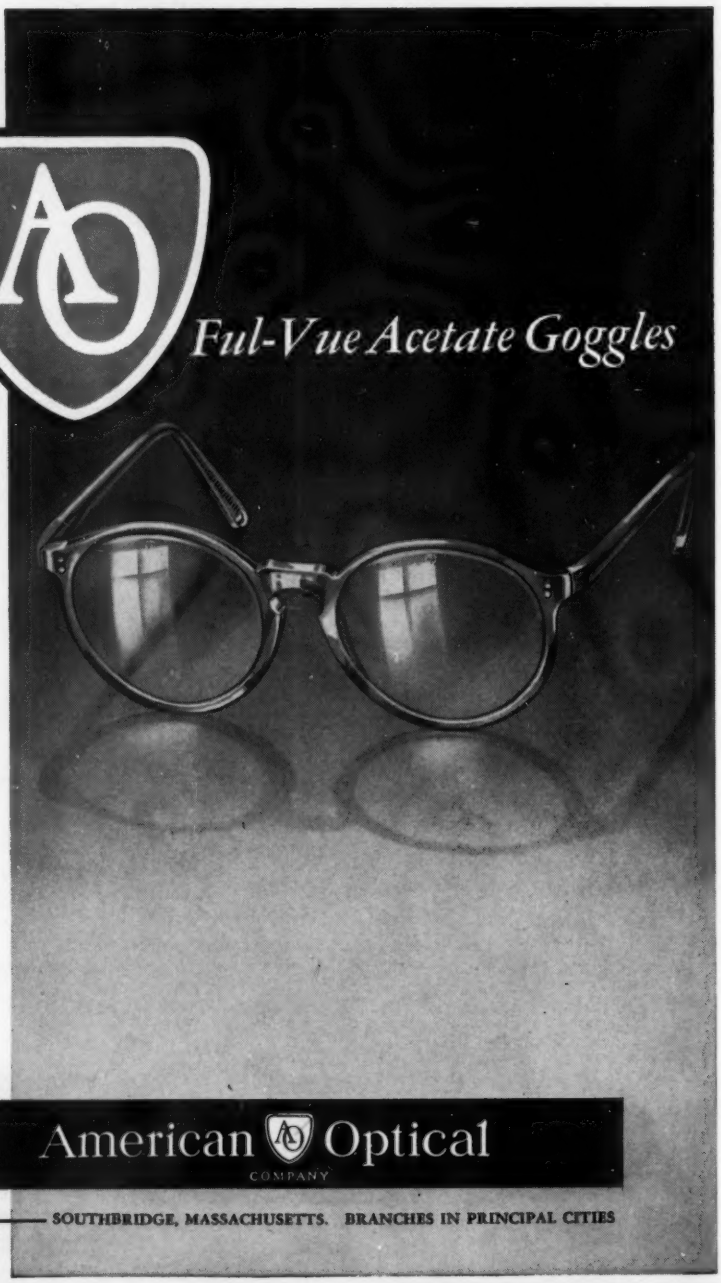
Products That Promote Sanitation

42-16 West Street, Long Island City 1, New York, N. Y.

BRANCHES IN PRINCIPAL CITIES OF UNITED STATES AND CANADA

CLEANSING DISINFECTANTS · INSECTICIDES · KOTEX VENDING MACHINES
PAPER TOWELS · AUTOMATIC DEODORIZING APPLIANCES · LIQUID SOAPS

New... *Ful-Vue Acetate Goggles*



... for Lightweight, Good Looking Protection!

Sturdiness and smartness see "eye-to-eye" in these new spectacle goggles by AO. They provide assured protection with better feel, fit and comfort. You will appreciate the comfort of the strong but lightweight new keyhole bridge, face-formed for wearing ease . . . the nose pads which evenly distribute goggle weight. Ful-Vue advantages include lenses that conform to and cover eye orbit for maximum vision and safety . . . high set end pieces that take hinges and temples out of line of sight. Available in 5 bridge sizes, with clear lenses for machine, hand tool and laboratory work — or with Calobar lenses to combat glare, heat, ultra-violet and infra-red hazards.

Your nearest AO Safety Representative can supply you.

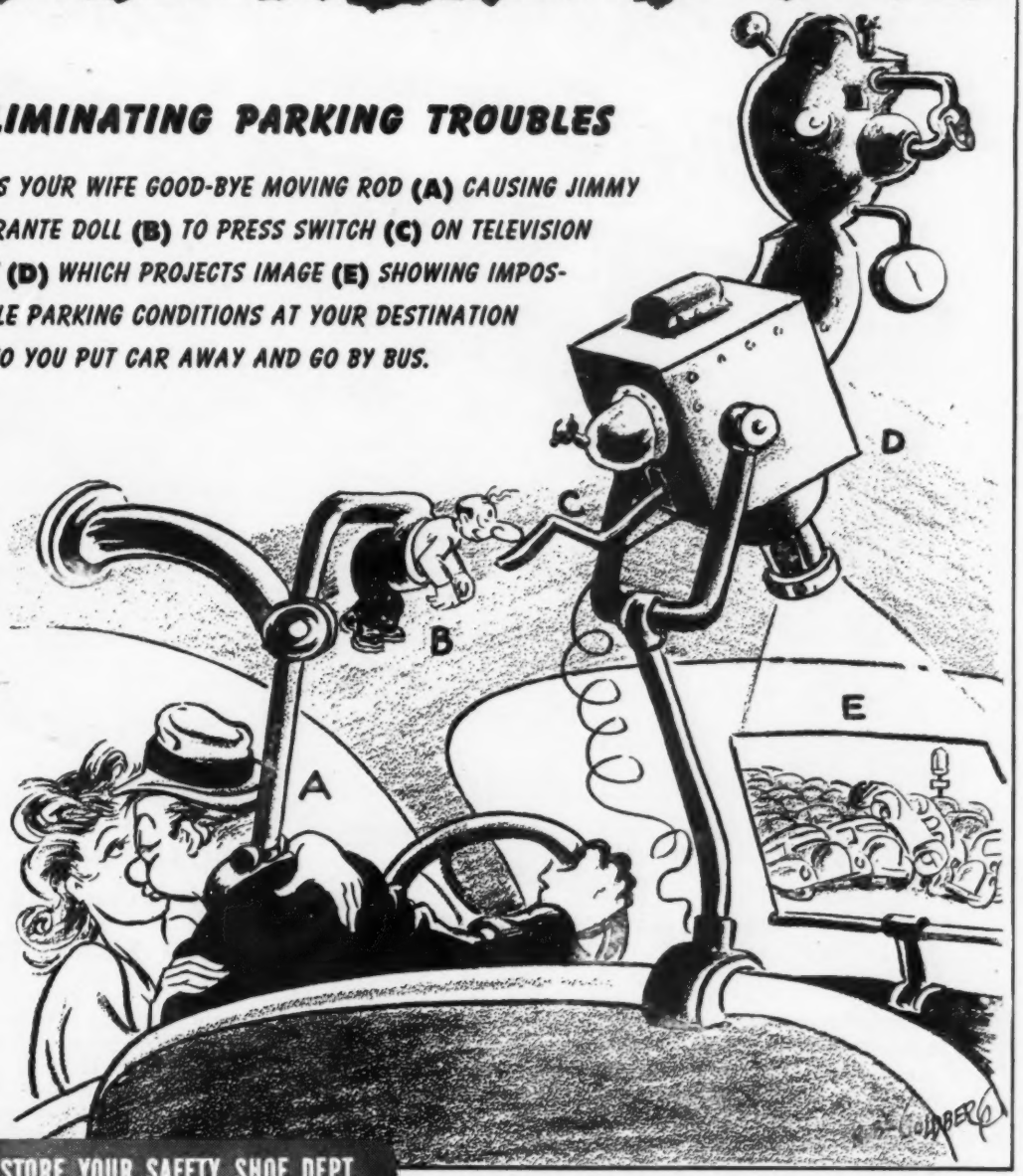
American Optical COMPANY

Safety Division — SOUTHBRIDGE, MASSACHUSETTS. BRANCHES IN PRINCIPAL CITIES

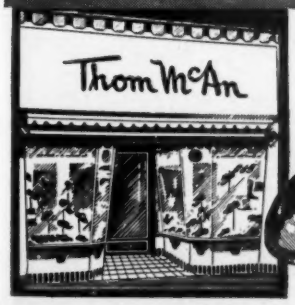
One Way To Do It! — by Rube Goldberg

ELIMINATING PARKING TROUBLES

KISS YOUR WIFE GOOD-BYE MOVING ROD **(A)** CAUSING JIMMY DURANTE DOLL **(B)** TO PRESS SWITCH **(C)** ON TELEVISION SET **(D)** WHICH PROJECTS IMAGE **(E)** SHOWING IMPOSSIBLE PARKING CONDITIONS AT YOUR DESTINATION —SO YOU PUT CAR AWAY AND GO BY BUS.



MAKE THIS STORE YOUR SAFETY SHOE DEPT.



More than 500 stores in over 300 cities.

SAFETY SHOE DIVISION
25 W. 43 ST., NEW YORK 18, N. Y.

ONE WAY to approach the foot safety problem in your plant is to provide Safety Shoes of some brand that your men don't know—or perhaps don't like.

THE EASY WAY is to select Thom McAns, "the Safety Shoes that workers wear WILLINGLY"—because they already know and trust the Thom McAn name.*

THE EASIEST WAY OF ALL—"LET Thom DO IT"
Let us stock our Safety Shoes for you in our own Thom McAn retail stores, fit them with our own trained fitters, without cost or obligation on your part. You, freed of "shoe store problems," can concentrate on more important things, make yourself a more valuable man. Proof? Details? Write for them—today.

*MORE MEN buy their shoes from **Thom McAn** than from **ANY OTHER** shoe store organization **IN AMERICA**

For Dry Scrubbing At Its Economical Best

CHOOSE THE SCRUBBER WITH THE SELF-SHARPENING BRUSH FEATURE

There's never a *dull* moment on brush performance with the *Finnell* Dry Scrubber. A flip of the switch reverses the motion of the brushes and re-sharpens them automatically! . . . eliminating the need for frequent changing of brushes by hand in order to maintain a good cutting edge. Automatic reversal of the brushes also helps keep them functioning efficiently by ejecting sticky substances that may otherwise tend to clog and slow up the cleaning process.

With this heavy duty *Finnell*, grease-caked floors can be cleaned in *one-tenth* the time required when hand-spudding, and far more thoroughly. Floating brush rings enable the two powerful scarifying brushes to get into indentations and grooves that rigid coupling brushes pass over and miss. And the low construction makes it easy to clean around and beneath equipment. The machine is adaptable to wet scrubbing, steel-wooling, waxing, and polishing. Ruggedly constructed, assuring long, trouble-free service. Has heavy duty G. E. Motor, oversize Timken Roller Bearings, special bronze worm gears—a quality product throughout, developed and produced by *Finnell*, originators of mechanical floor-maintenance equipment.

Clean floors aid safety underfoot . . . bolster worker morale . . . reduce fire hazards . . . speed trucking, and otherwise aid production. It *pays* to keep floors clean —especially with a labor-saving *Finnell* Dry Scrubber.

For free floor survey, consultation, or literature, phone or write nearest *Finnell* branch or Finnell System, Inc., 3505 East St., Elkhart, Ind. Canadian Office: Ottawa, Ont.

FINNELL SYSTEM, INC.

Pioneers and Specialists in

FLOOR-MAINTENANCE EQUIPMENT AND SUPPLIES

BRANCHES IN ALL PRINCIPAL CITIES

Occupational HAZARDS

VOLUME 9 • NO. 7

CONTENTS FOR MAY, 1947

THE STAFF

Editor
John KoVace

Production Department
W. V. Linas

Circulation Department
E. J. Hexter

Art Department
A. R. Bouhall

General Manager
Edwin M. Joseph

Occupational Hazards, Inc., is an affiliate of the Industrial Publishing Co., publishers of REFRIGERATION INDUSTRY, INDUSTRY AND WELDING, DIE CASTINGS, FLOW, TAXICAB INDUSTRY.

Eastern Office—60 East 42nd St., New York 17, New York, Murray Hill 2-0488.

Chicago Office—64 East Lake St., Room 1110, Chicago 1, Illinois, Andover 4972.

By SUBSCRIPTION, one year, $2.00. Single copies, 25 cents. Canada: One year $3.00. Foreign: One year, $4.00.

Copyright 1947, by Occupational Hazards, Inc. Published Monthly by Occupational Hazards, Inc., 1240 Ontario, Cleveland 13, Ohio. Irving B. Hexter, President, Lester P. Aurbach, Vice-President. Phone: Prospect 1251.

COVER: The nation is staggering under a fire loss which exceeded $560,000,000 in 1946 and accounted for 10,000 deaths last year. Typical of the industrial fires which helped swell the red ink figures is this tire company fire in Philadelphia in which thousands of tires were destroyed and a large section of the city blacked out by the dense smoke. Publicity and more publicity is needed to make America fire-conscious.

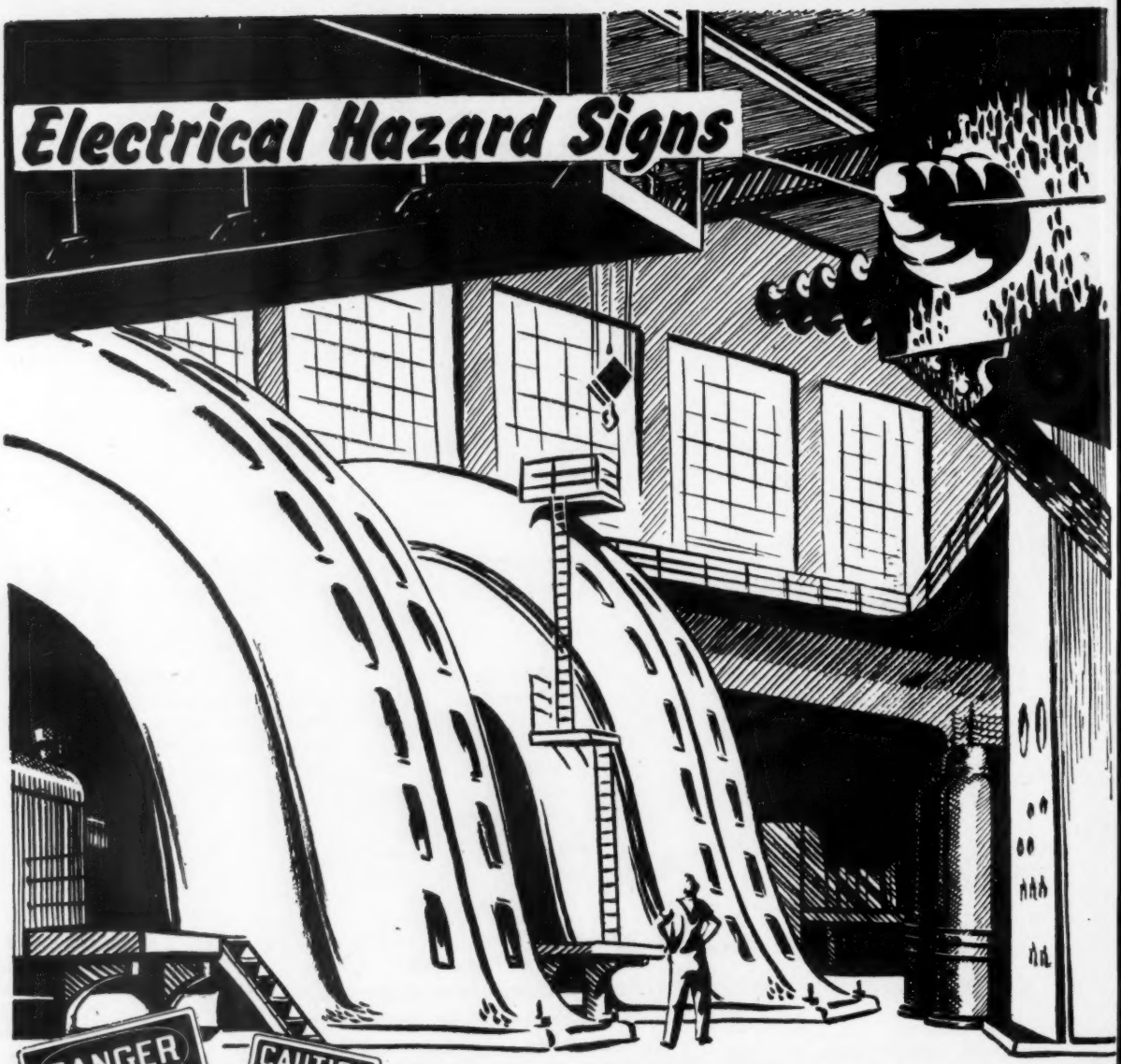
"THERE'S PROFIT IN PREVENTION"

	Page
Men and Matters	13
Press-Proofed Prevention	14
Technical Data File on Industrial Dust Hazards	17
A Health Program for Small Plants	20
Power Press Safety Tips, Part III	22
Safety Doubles in Brass at Western Cartridge — Plant Picture Story	24
Useful Literature	28
Tracking Down Hazards Through Eight States — The Pay Off at Tennessee Gas	29
And Sudden Injury	32
Right Off the Docket	33
Over the Editor's Shoulder — Letters	37
New Products	40

FIRE PROTECTION FOR INDUSTRY SECTION

Industrial Fire Picture of the Month—Too Late for Prevention	42
Plant Menace: Magnesium—Treat It With Respect	43
Assembly Plant Logic: Good Building Maintenance Needs Good Fire-Safety	44
Maintenance and Inspection Procedures — Water-Type Extinguishers	46
Protecting Oil Storage Tanks With Subsurface Foam	47
Advertisers' Index	48

Electrical Hazard Signs



When harnessed to serve Industry, Electricity is a powerful giant. To those who respect its punch

STONEHOUSE SIGNS
FOR ACCIDENT PREVENTION

prove a strong reminder. But for the men who forget, these signs stand guard 24 hours a day, constantly urging them to be careful . . . to take no chances.

Stonehouse SIGNS, INC.
MANUFACTURERS

Stonehouse Catalog No. 8 shows many Electrical Hazard signs. It's Free on request.

SIGNS SINCE 1863 — 842 LARIMER ST. — DENVER 4, COLO.

ACCIDENT PREVENTION SIGNS IN STANDARD COLORS AND DESIGNS

PROTECTION WHERE NEEDED

H 730-5 . . . Men's Black Kip Blucher Oak Leather Outsole and Slip Sole. Rubber Heel.

Insure Workers Feet In Sure Protection with HY-TEST Safety Shoes

Catching foul tips is the all-seasons job of Hy-Test's Anchor Flange Steel Box Toes. That's a *big* job in the accident league where serious, costly toe injuries are always popping up. Hy-Test anchors the steel toe under sturdy, pliant leathers for a smoothly patterned safety shoe that feels better, looks better, and wears longer. Sizes are 5 to 15 in widths of AA to EEE. Make it possible for your workers to buy Hy-Test Safety Shoes in your plant. Drop us a card for details.

HY-TEST SAFETY SHOES

THE WORLD'S LARGEST SELLING SAFETY SHOE

ANCHOR FLANGE STEEL BOX TOE

...s flange adds extra strength to ... steel arch's sidewall. Anchored ...tween insole and outsole, it also ...ves to resist shifting, tilting, and ...ting through outsole under impact.

HY-TEST Safety Shoes

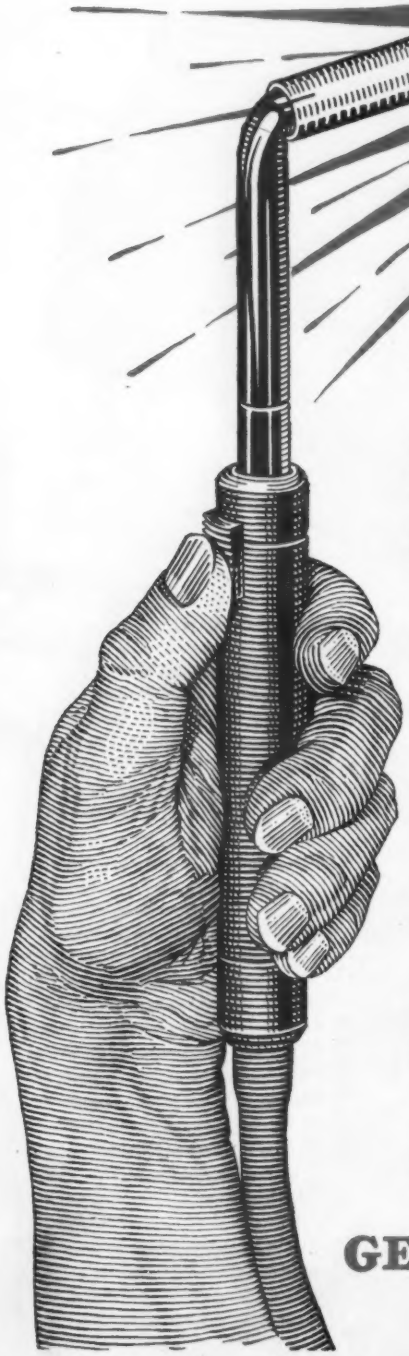
...Y TEST DIVISION — INTERNATIONAL SHOE COMPANY — ST. LOUIS 3, MISSOURI — PLASTICS OFFICE ...

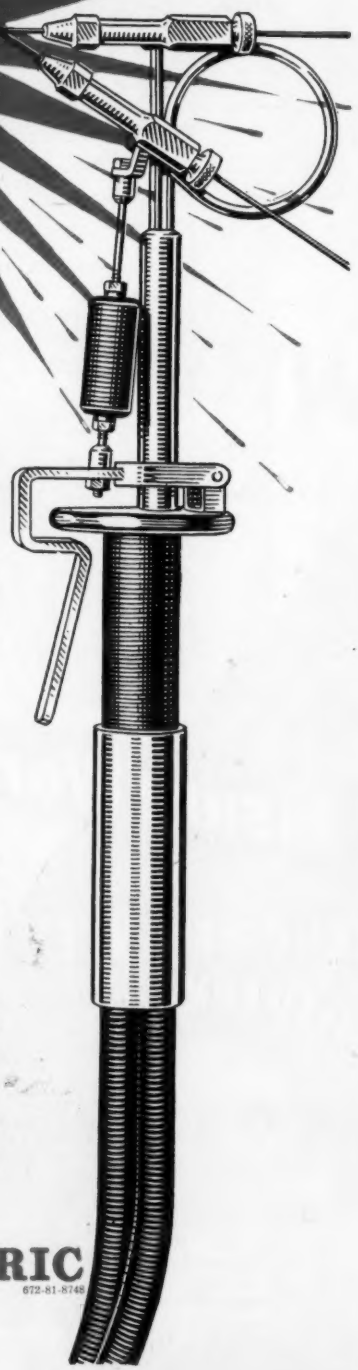
NEW TUNGSTEN ELECTRODES

FOR INERT-ARC WELDING

FOR ATOMIC-HYDROGEN WELDING

99.9% PURE





General Electric tungsten electrodes, produced by the world's largest user of tungsten, assure you quality of content, plus precision finish. They are now available for manual and automatic welding in diameters ranging from .040 to ½ inch and in lengths of from 3 to 24 inches as standard. Random lengths up to 60 inches furnished on request.

General Electric specifications state:

Tungsten electrodes shall be—

FREE FROM

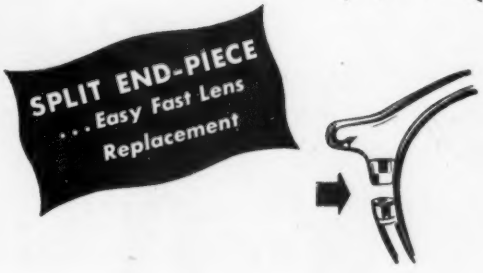
Nonmetallic inclusions • Segregation • Slivers • Cracks • Seams • Pipes

For use with the Inert-Arc process, electrodes of ground finish are recommended. Diameters shall be held to 0.001 inch tolerance.

Your local General Electric Distributor can supply these tungsten electrodes from stock, or write Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

672-81-8748



HERE'S a new safety eyewear style especially designed for workers on jobs where explosion hazards exist. The Y-80 Ful-Vue Spectacle-type frame is made from acetate, and has no exposed metal parts which can cause sparks. A new-type split end-piece construction permits rapid and easy replacement of lenses.

Your Bausch & Lomb Industrial Eyewear distributor now has the Y-80. It can be supplied with plano safety lenses, or in safety lenses individually ground to the prescription of each worker, for complete eye safety *and* visual efficiency.

BAUSCH & LOMB
OPTICAL COMPANY ROCHESTER 2, N.Y.

#400—Collarless Dress

#3—Jumper Jack (4 styles)

#317—Wraparound Aprons (2 styles)

wherever there's a job for women...

there's a job for

HATTIE SNOW UNIFORMS

REG. U.S. PAT. OFF.

#800F—Fly Front Dress (long or short sleeves)

Slack Suit

Summerall

Jumperall

Coverall

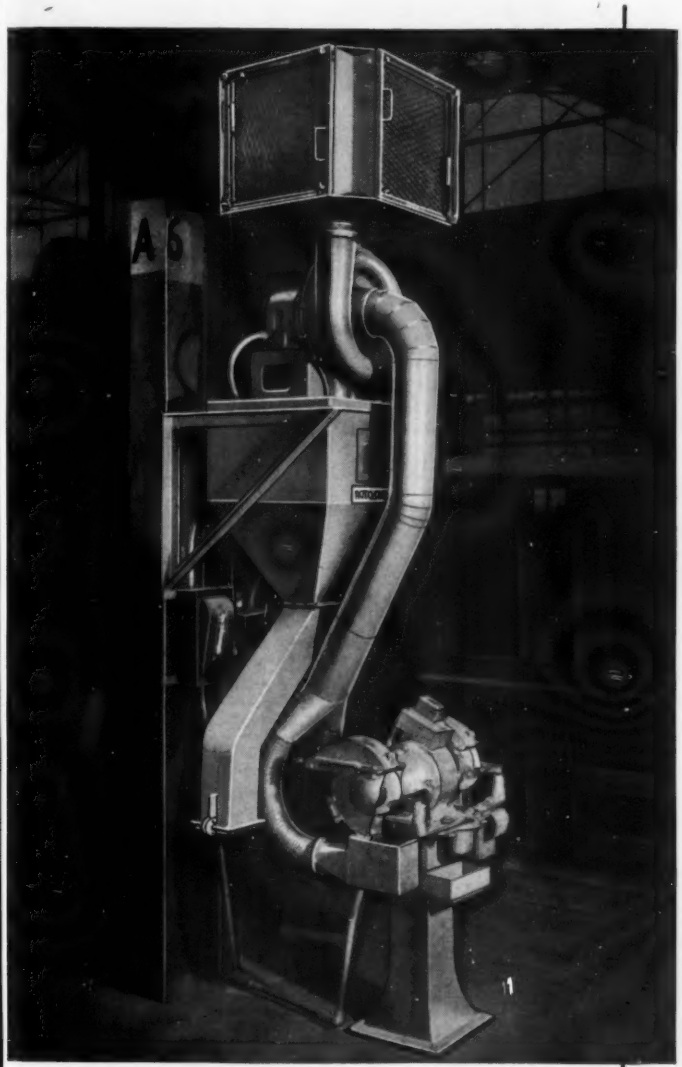
BETTER work garments with plenty of Eye-Appeal for the gals who wear them, but designed with a sharp eye for safety-on-the-job. Strong cotton fabrics that stand up to rough usage and rougher laundering. Sanforized shrink-proof. Double stitched throughout, with bar-tacked seams at every point of wear and strain. Styled *by* a woman to meet a woman's needs. That's why they're used by America's largest employers of women. That's why women love to wear them.

WRITE FOR PHOTOS AND PRICES

RANDLES MANUFACTURING CO., OGDENSBURG, N.Y.

There's Always Room For a Roto-Clone

Modern Dust Control Equipment Designed to Fit the Space and the Job



ARE you denying dust control to operations such as this due to lack of space or isolated position of the machine? Roto-Clone, by combining the functions of exhausting, separating and storing of dust in a single unit, permits a flexibility of application to meet every situation.

This two wheel grinding stand, although placed in a crowded center-of-plant location, is serviced by a wall mounted type D Roto-Clone. Dust-laden air is removed at the hoods, conveyed to the Roto-Clone where the dust is separated and delivered into the hopper and the air is passed through a final aftercleaner and recirculated dust-free to the workroom. A complete, compact operation utilizing unused wall space and so designed to permit disposal of collected dust at floor level.

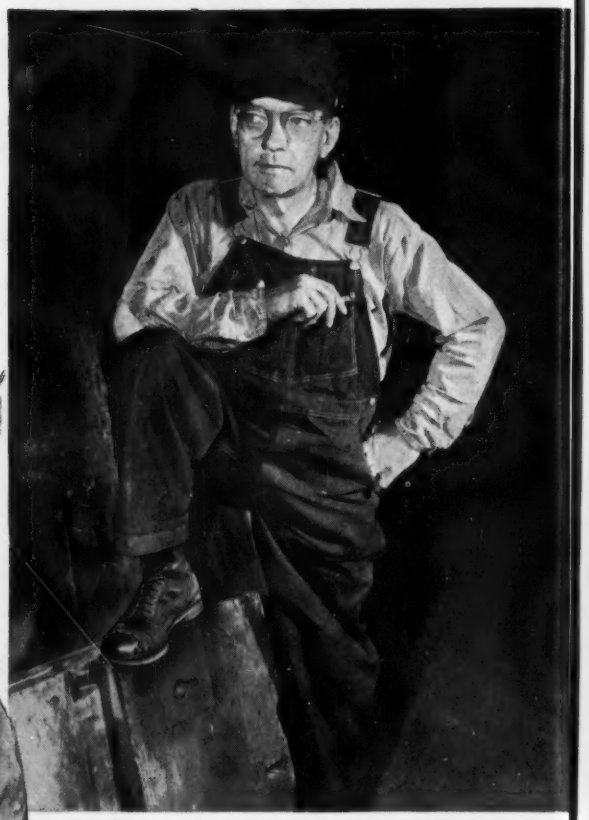
Application of individual Roto-Clone units to single machines solves line production problems, too. Long branch runs of duct are eliminated and equipment may be moved without redesigning a central exhaust system. But whatever your needs, there's a Roto-Clone Dust Control System that will do the job more efficiently at lower cost. Write for Bulletin No. 270-A.

AMERICAN AIR FILTER CO., INC.
366 Central Ave., Louisville 8, Ky.
In Canada: Darling Bros., Ltd., Montreal, P. Q.

AAF

ROTO-CLONE
DUST CONTROL EQUIPMENT

"BOARD" MEETING



The "board" met this Lehigh Safety Shoe with an impact of 1200 ft. lbs! It was a foundry "bottom board" used as a base for molds. Fell 4 feet when a hoist chain slipped. Landed point first on the Lockrim* steel toe box of this Lehigh. And the workman walked away! No toes broken. No time lost. That's protection...the Lehigh kind. Not just any Lehigh, on any job...but the right Lehigh engineered to fit the job. Only Lehigh offers this specific safety shoe service to combat specific hazards in your plant. The Lehigh representative will recommend the proper safety shoe for every job...every floor condition...and supervise proper fitting for every man. Write, wire or phone to have him see you.

*T. M. Reg.

another Lehigh service

Here's a permanent record card your Lehigh representative will personally compile for every employee. It establishes an accurate check on every measurement and foot condition relative to proper fitting. It's an efficient guide for each worker's foot comfort... an invaluable aid to your foot safety program.

LEHIGH Division of the ENDICOTT JOHNSON CORPORATION

SAFETY SHOE COMPANY

ALLENTOWN, PA.

WESTERN OFFICE: 12th AND SPRUCE, ST. LOUIS 2, MO.

MEN AND MATTERS

News • Activities • Plans

APPOINTED DIRECTOR . . . John V. Grimaldi has been appointed as director of the Industrial Engineering Division of the National Conservation Bureau, accident prevention division of the Association of Casualty and Surety Executives. Mr. Grimaldi joined the National Conservation Bureau as a research engineer in January, 1945. He took charge of and developed the Bureau's rehabilitation program. Mr. Grimaldi has been director of the safety engineering program of the Grumman Aircraft Engineering Corp., Bethpage, N. Y., and safety consultant for Scully Steel Products, a subsidiary of U. S. Steel.

FRANKLIN INSTITUTE MEDALIST . . . The Longstreth Medal, annual award of The Franklin Institute for inventions of high order was presented to Samuel Berman, research engineer of the Waugh Laboratories Division of Waugh Equipment Company, during the Institute's recent Medal Day Ceremonies. Mr. Berman received the Longstreth Medal "In consideration of the development of a metal locator for use in surgery

Mr. Berman

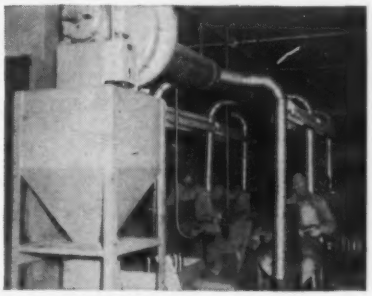
which has greatly facilitated the location and removal of foreign metallic bodies imbedded in the tissues."

INDUSTRIAL CHEST X-RAY . . . Six thousand workers at the Stewart-Warner plant in Chicago, Ill., received chest X-rays during a recent survey made by the Tuberculosis Institute of Chicago and Cook County. Speed with which the survey was conducted was greatly facilitated by the making of record cards well in advance and by X-raying workers without the partial removal of clothing.

Workers are shown entering and leaving the X-ray bus where the average length of stay was 40 seconds. (*General Electric Photo.*)

AO OFFICIAL DIES . . . American Optical Company, Southbridge, Mass., reports the untimely death of its president, Charles O. Cozzens, who died recently at the age of 56 after a 40 year brilliant optical career. He had been elected president of AO on July 30, 1946. During his long career with the company Mr. Cozzens was responsible for sponsoring and introducing many new developments in the ophthalmic field, in instrument lenses and frames. He was equally interested in the field of industrial safety and under his inspiration American Optical developed many new and improved safety products specifically designed to safeguard industrial workers. George B. Wells has been elected his successor.

MOVABLE UNIT EXHAUT SYSTEMS . . . Solar Aircraft Company, Des Moines, Ia., has at the present time 10 dust collector units, such as pictured here, to exhaust air from all grinding and polishing operations. Units manufactured by the American Air Filter Company under the name



of Roto-Clone are employed, and this unit system proves very flexible since it enables complete departments with their duct work to be moved as necessary to meet manufacturing requirements and floor layouts.

NEW DISTRIBUTOR . . . The Davis Emergency Equipment Co., Newark, N. J., announces that the National Safety Products Company, 1800 E. Forest Ave., Detroit, Michigan, has been appointed distributor of their products in the Michigan, Detroit and Toledo area.

HEALTH & SAFETY HEAD . . . Appointment of Michael F. Biancardi as manager of the Allis-Chalmers health and safety department, has

Mr. Biancardi

been announced by W. C. Van Cleaf, director of the company's industrial relations division.

(*Turn to page* 26)

PRESS - PROOFED *Prevention*

Culled from the Nation's News Pages

Too Late To Prevent These Accidents, BUT—

Resumes of these industrial accidents were gleaned from actual newspaper reports. Preventive measures and suggested safe practices are recommended here to help you cope with similar mishaps should such situations occur at your plant. Clip and save.

Cincinnati, Ohio, *Times-Star*:

A grinder, employed at a local coffin factory, suffered a possible fracture of his left arm when an emery wheel at which he was working burst.

Prevention: Safeguards against bursting grinding wheels include inspection of wheel conditions before use, careful wheel mounting on proper sized spindle, and the use of adequate machine guards or sturdy enclosures.

Lansing, Michigan, *State Journal*:

A die setter at an auto plant was critically injured when he was struck on the side of the head by a crowbar. He was prying a heavy piece of metal when the crowbar slipped and struck him, inflicting a skull fracture.

Prevention: A properly beveled crowbar point gives a good "bite" and is less likely to cause trouble than a dull one. Avoid greasy gripping of tools by using friction gloves. Get a good stance before applying pressure.

Mason City, Iowa, *Globe Gazette*:

An explosion occurred in an oil refinery building, burning a worker who was cutting with an aceytelene torch on the top of crude oil storage tank. Sparks from the cutting process dropped through a cable hole into the tank and ignited oil vapors. vapors.

Prevention: Cutting operations should not have been permitted until all known fire and explosion hazards were removed. Evidently air tests had not been made to determine whether explosive vapors were present before cutting operations started. If they were present, they should have been removed by steam and flushing the interior and exterior of the tank with caustic soda and water to remove traces of flammable liquids. As added precaution, another worker equipped with fire extinguishing equipment should have been stationed near the cutting operation to cover any fire eventuality.

Watertown, N. Y., *Times*:

Serious head injuries and a compound fracture of the left arm resulted from an accident to an employee at a paper core and plug company when, after "tripping" logs, a log rolled from the truck and struck the workman, knocking him down and pinning his left arm beneath him.

Prevention: Proper unloading procedure will reduce accidents of this nature. Unload trucks from the top down using signals between loaders on truck and those on ground. Use stakes on truck sides with tie chains spanning load to prevent spreading and rolling of load.

Canby, Minn., *News*:

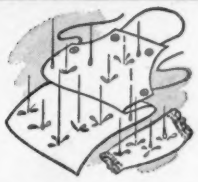
The right hand of a worker was amputated as the result of a tow mill accident. While replacing a belt on a pulley on a piece of mill machinery, the worker's hand became caught between a chain and sprocket. The hand was thrown into the sprocket by the pulley which had a piece out. A crowbar was used on the chain to remove the hand from the sprocket.

Prevention: Regular and thorough inspection for cracked pulleys should have preceded the belt changing operation. When a crack occurs, or a piece of the rim is broken out the pulley should be replaced before further repairs are carried out.

New York, N. Y., *World Telegram*:

An employee fell four feet from a ladder into a shallow tank containing six inches of boiling water while working on a barge tied up at a pier. He suffered burns on the arms, legs, head and body.

Prevention: Tank should have been covered or cooled before operations were begun. Care in placement of ladders, and the use of non-slip safety bases are musts in any ladder work. Dry-sole shoes prevent slipping.



ACID-RESISTANT

Acitex resists caustics, splashing liquids and the most injurious acids—such as nitric, sulphuric, hydrochloric, acetic, hydrofluoric, carbolic.

COMFORTABLE

Acitex aprons and sleeves are lightweight—cool and comfortable to wear. Easily adjusted *Acitex* straps for attractive fit on every wearer.

EXTREMELY TOUGH

Acitex wears like iron. It's highly resistant to abrasion. No metal parts; electronically welded seams and double-thick *Acitex* grommets.

ECONOMICAL

The moderate cost of *Acitex* aprons and sleeves plus durability add up to real economy. That doesn't begin to include savings in accident costs.

PREFERRED ON ALL COUNTS . . .

CESCO'S IMPROVED *Acitex* APRONS AND SLEEVES

• Now you can get protective aprons and sleeves made of CESCO's famous *Acitex!*

Here's more effective resistance to a greater number of acids, caustics and splashing liquids than provided by any other material having equal flexibility and toughness.

Acitex excels in toughness—and electronically welded grommets and seams are equally strong. *Acitex* is lightweight and cool-feeling. And, *Acitex* aprons and sleeves are economical—priced moderately and of durable quality for long service.

Speaking of versatility—CESCO's *Acitex* aprons and sleeves have a wider range of uses than others because of *Acitex'* superior and exclusive features.

SCIENTIFICALLY TESTED . . . PROVED IN USE

• CESCO's *Acitex* has long been used successfully for protective hoods. Research and severe laboratory testing proved its usefulness as apron and sleeve material. On-the-job tests proved its adaptability and value.

All this assures you of getting the best when you specify CESCO *Acitex* aprons and sleeves. For full information . . . call, write or wire. . . .

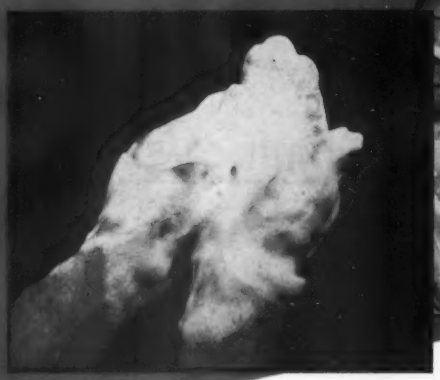
CHICAGO EYE SHIELD COMPANY
2308 Warren Boulevard • Chicago 12, Illinois

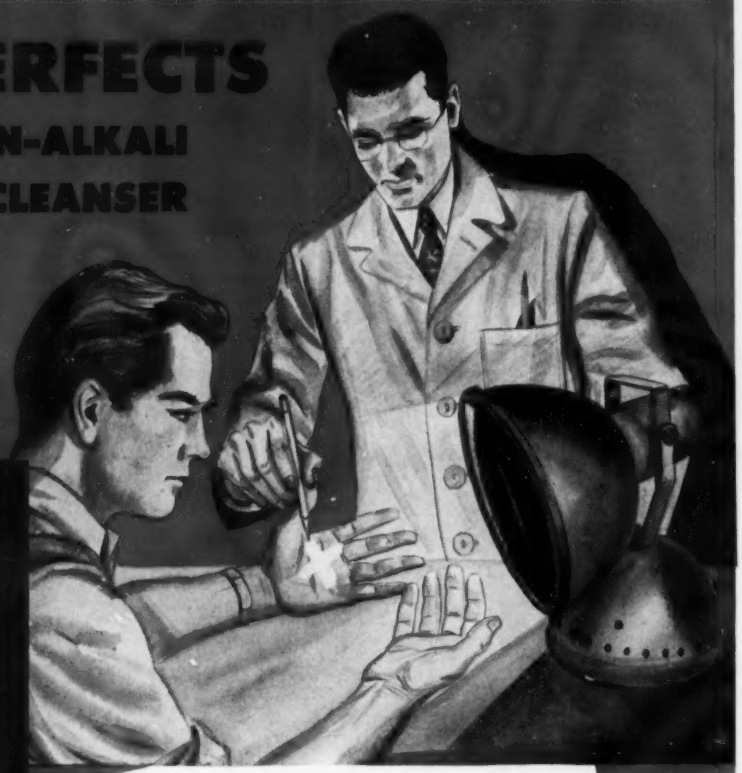
CESCO

CESCO FOR SAFETY

SCIENCE PERFECTS
THIS AMAZING NON-ALKALI INDUSTRIAL SKIN CLEANSER

NEW FORMULA
SBS-11





BLACK LIGHT PROVES FORMULA SBS-11 CLEANS HANDS FASTER AND EASIER

Scientific tests of fluorescent soil made at independent laboratories under the "black light" (which makes the most deeply imbedded and ordinarily invisible particles of soil clearly visible) prove conclusively that the new, improved Formula SBS-11 removes stubborn grease and soil faster and easier than any other skin cleanser.

And no wonder! Faster . . . safer . . . milder . . . that's the new and improved Formula SBS-11. For years this amazing industrial hand cleanser has been used by 13,000,000 workers in 14,000 plants. Now, thanks to 18 months' painstaking research and experiment, it is an improved product—blended without alkali salts or phosphates. Low-titer soaps and new organic sudsers lather quickly, loosen stubborn dirt and grease and grime . . . corn meal lifts the dirt for easy rinsing . . . soothing balm is massaged into the skin as the hands are rinsed, leaving them refreshed and soothed. Protect your production by providing your employees' hands with Formula SBS-11—"The Washword of Industry." For a generous free trial sample of new, improved Formula SBS-11, sign the coupon, attach to your letterhead, and mail to SUGAR BEET PRODUCTS CO., CHEMICAL BY-PRODUCTS DIV., SAGINAW, MICHIGAN.

Send the trial supply of the New Formula SBS-11 to:

NAME: _____

ADDRESS: _____

CITY & STATE: _____

TECHNICAL FILE ON INDUSTRIAL DUST HAZARDS

SAVE THIS VALUABLE REFERENCE MATERIAL: BUILD UP A PERMANENT OFFICE FILE

B115. RESPIRATORY DUST DEFENSE SYSTEM. Larger dust particles inhaled are caught on the hairs of the nostrils from which they may be dislodged by blowing or sneezing. Secondly, the walls of the air passages (throat, pharynx, trachea, bronchi) leading to the lungs are covered with tiny hair-like structures that move in unison with a fast, upward lash and a slower return stroke. This action tends to arrest and push back out for expectoration any foreign matter entering the respiratory passages.

A final trap for dust particles which manage to reach the terminal lung air spaces (alveoli) is provided by scavenger cells or valve cells (dust-phagocytes). Each of these cells engulfs a dust particle and carries it to the lymph nodes, filter and storage places for excess sediment in the lungs. Here, harmless dusts remain inert or are subsequently absorbed in a gradual way by the body waste system. However, this entire trap defense system is apt to break down either when the respiratory system becomes overloaded with a dust attack, or when sufficient free silica is present in the dust mixture to exert its specific chemical irritation on the cells.

The respiratory system can offer little defense against lead or other metal dusts that are toxic in nature and produce body cell poisoning.

B116. MINERAL DUSTS. Where respiratory tissues are not already infected or diseased, all but asbestos among the silicates, and all non-toxic mineral dusts other than free silica, lie inert in the tissues. Asbestos is the only silicate known to have any irritating effect on the lungs capable of producing a progressive tissue scarring. Only a few of the others, regardless of their concentration, cause even a passing tissue-inflammation. Even the mineral dust particles harder than quartz, such as silicon carbide, aluminum oxide and diamond dust (the hardest of them all), apparently lie inert when breathed into the lungs.

When free silica is in combination with other dusts, even to a small degree, some fibrous alteration of the lung lymph cells is possible. Breath is shortened and disability results in proportion to the amount of hard, crystalline scar-tissue which is progressively formed.

B117. PNEUMOCONIOSES. Pneumoconioses is the general term for diseases caused by dusted lungs. The kind of harmful dust inhaled determines the specific type of injury.

B118. FIBROSES. A fibrosis is the replacement of the elastic, gas-interchanging tissues of the lungs by an impervious, functionless scar-tissue. It is caused most commonly by free silica and asbestos dusts, both of whose fibroses are considered progressive and dangerous. Harmful concentrations of dust require at least two years to start the fibrotic process. In the case of free silica exposures, the fibrosis results from the chemical and toxic irritating action of the dust particles. Fibrosis from asbestos dust is due to the inability of the lung dust-defense cells (phagocytes) to ingest the long, fibrous asbestos dust particles.

B119. SILICOSIS. Silicosis, also called stone-cutters' consumption, grinders' and potters' rot, etc., is the name given to chronic, incurable, disabling fibrosis caused by the prolonged breathing of fine particles of free silica. In its diagnosis it is usually divided into three different stages:

1. The early, comparatively harmless stage, which demonstrates no symptoms of disability that might prevent the worker from continuing on the job.

2. The stage of first awareness, when the worker's breathing is perceptibly labored and normal chest expansion decreases.

3. The final stage, when breathing becomes very difficult. This may develop even years after removal from the hazard. In this stage the victim's circulatory system functions below normal, and respiratory diseases, such as tuberculosis, are contracted more easily.

With a few exceptions, at least seven years' exposure is said to be required for the development of silicosis, the appearance of which may be located by X-ray in any of the three stages. For an accurate diagnosis, however, a full history of the previous employment and illnesses of the worker under consideration must be studied. There is an abundance of popularly-written, as well as technical material on the subject of silicosis. Much is controversial, but medical opinion concurs in the belief that lung conditions brought on by silicosis are definitely progressive and without medical remedy at present. However, much favorable experimentation is being done with aluminum powder treatment. Emphasis in industry upon prevention and control of dust hazards is the most effective defense against the disease.

B120. ASBESTOSIS. Asbestosis is the name given to chronic, incurable scarring of the lung tissue, a fibrosis, caused by the continued inhalation of asbestos. Asbestos is a fibrous mixture of various silicates, mainly the hydrated silicate of magnesium with additional quantities of iron, aluminum, sodium, potassium and calcium. Probably the fibrous characteristic, rather than the chemical composition, is responsible for the harmful tissue changes in the lungs, since there are other silicates, like pure mica, shale, feldspar and talc, that are similar chemically to asbestos, but are inert and comparatively harmless. It has been shown that the dust-eliminator cells (phagocytes) of the lungs attempt to ingest the asbestos

TECHNICAL FILE ON INDUSTRIAL DUST HAZARDS

SAVE THIS VALUABLE REFERENCE MATERIAL: BUILD UP A PERMANENT OFFICE FILE

fibers as they would other dust particles, but the fibers are so long that they project beyond the margin of the cell, thereby killing it.

Like silicosis, asbestosis may be complicated by tuberculosis, but bronchopneumonia is the more common fatal complication. Simple asbestosis is chronic and is marked by a severe shortness of breath, a dry unproductive cough and often a bluish cast to the skin. Ordinarily, the disease does not occur before eight years of exposure. Hazards occur in fabricating plants where fireproof textiles, brake linings, insulation, etc. are made. In contrast to the other dusts, the longer fibers are considered much more dangerous than very finely ground, powdered asbestos.

B121. ANTHRACO-SILICOSIS. This disease, sometimes called "miners' asthma," is a fibrotic affection of the lungs caused by the inhalation of dust usually found in anthracite coal mining and processing. Normally, a worker is affected after five years of exposure and the disease is most frequent among those who are exposed to dust containing over 35% free silica. In Pennsylvania the disease is most prevalent among hard coal workers exposed longer than 25 years to mixed dust concentrations of more than 300 million dust particles per cubic foot of air. The early stages reveal such symptoms as coughing, chest pains, shortness of breath and even a general physical weakening. In the later stages respiratory infections may develop easily. The worker usually loses considerable weight and is unable to continue on the job. A predominant complication among affected workers is bronchitis, while the incidence of tuberculosis is said to be four and a half times that found in the manufacturing industries as a whole.

B122. ANTHRACOSIS, SIDEROSIS. Anthracosis, a result of coal dust exposure, and siderosis, of iron, are both called simple benign pneumoconioses because they lack the marked fibrosis attributed to free silica. Characterized by a heavy pigmentation of dust cells they both remain non-progressive unless mixed with quartz dust. In such cases a modified type silicosis may develop from these minerals, and is called anthraco-silicosis and sidero-silicosis respectively. Uncomplicated by free silica admixture, most non-toxic mineral dusts lie inert in the lung lymph-nodes. Some pass out of the body through the blood and urine. If the concentration is too heavy, inert dusts remain in the alveoli for years. Lobar pneumonia or pulmonary cancer can be the end result of such obstruction.

B123. SILICATOSIS. Silicatosis is the name given to a non-nodular, non-progressive form of fibrosis of the lungs that follows exposure to various silicates other than asbestos, like shale, feldspar, talc, etc. These cause comparatively harmless, inert deposits in the lungs.

B124. FATAL ASPECTS. Rarely does either silicosis or asbestosis become a fatal disease, except when complicated by an infection, such as tuberculosis, for which there is provided susceptibility. In simple silicosis or asbestosis, the small functionless scar areas of lung tissue grow and combine into vast fibrous areas, and the breathing capacity of the lungs is greatly reduced, causing shortness of breath. This may lead to inability to perform physical labor.

Normally, the lungs have a greater oxygenating capacity than is actually needed to sustain life. Even loss of an entire lung does not too grossly handicap the average person. The far greater danger to the fibrotic worker is the ease with which an often fatal tuberculosis or other respiratory infection may develop upon the already diseased tissue.

B125. INFECTION AS EXPOSURE FACTOR. Free silica or asbestos dusts will accumulate to an unusual degree in any infected or infection-damaged respiratory tissue. This condition may precede or follow pneumonia, bronchitis, tuberculosis, etc. Undoubtedly, this is due to the fact that the affected tissue areas are no longer efficient in disposing of the dust inhaled.

Tuberculo-silicosis is a constant danger in any lung with a silicotic development, and is a frequent complication in advanced silicosis. The danger is particularly insidious, because the early tubercles are walled off from view in X-ray films by the fibrosis. When they get a good start, they tend to accelerate fatally the development of both diseases. The danger signs of such a fatal combination usually are loss of appetite, loss of weight, fever (not generally present in simple silicosis), night sweats, increased coughing and a more pronounced general body weakness.

B126. INHALATION VS. SWALLOWING. Poisoning generally is much more rapid when toxic dusts are *inhaled* rather than taken in by mouth and swallowed. Inhaled dusts can pass immediately from the lungs to the bloodstream and be pumped by the heart throughout the entire body. In the case of lead dust the danger from inhaling is considered 100 times greater than the swallowing of an equivalent amount.

When a toxic dust is swallowed, it usually is eliminated by the digestive system. Any that reaches the blood system passes on directly to the liver, where it is filtered and neutralized, only a negligible amount being released into the circulatory system. Therefore, it is not enough to stress only ingestion dangers in a working environment exposed to toxic dusts. It is far more important to reduce the amount of toxic dust in the air which the worker breathes, by means of enclosure or exhaust system methods.

(To Be Continued)

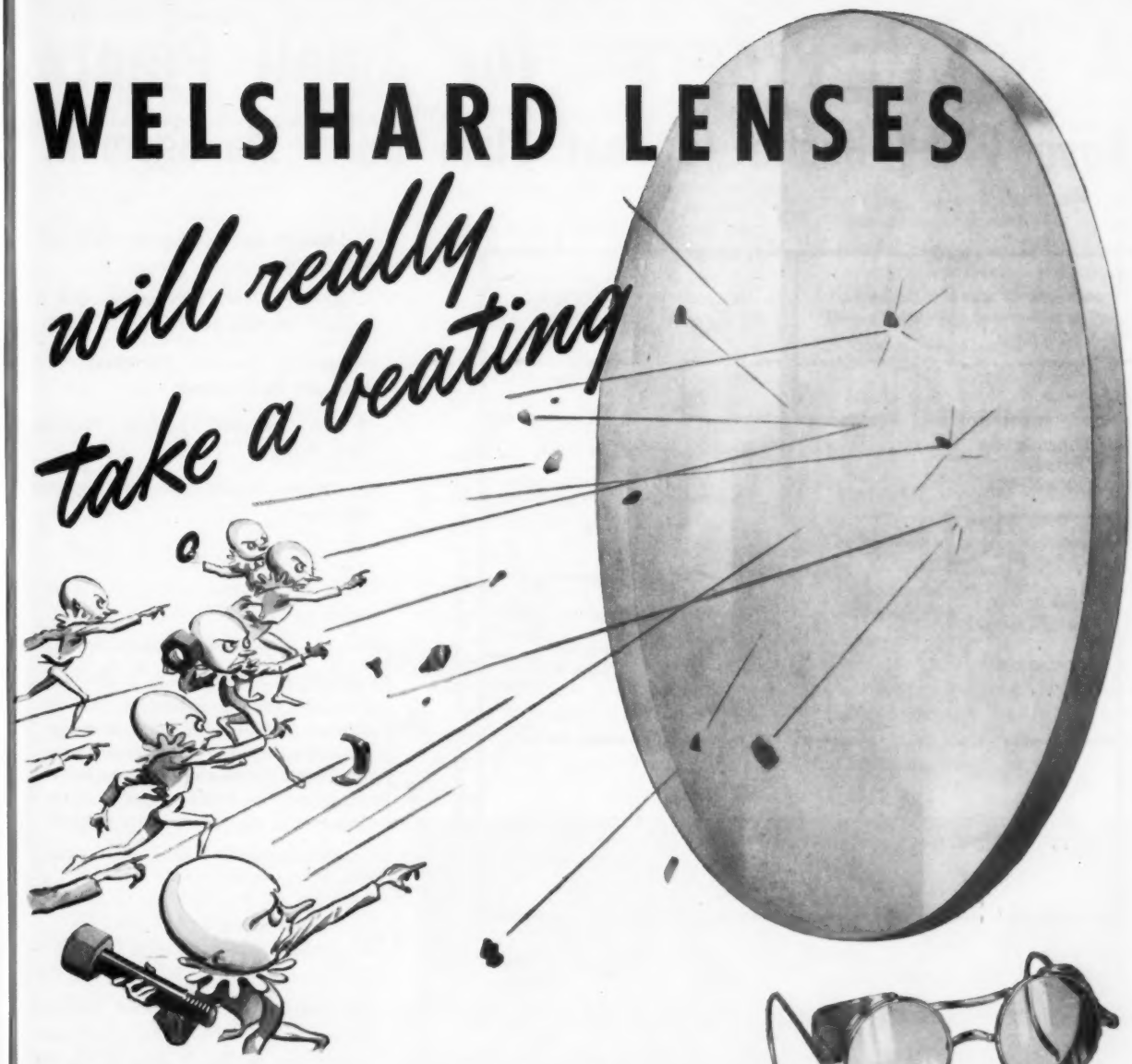
B123. SILICATOSIS. Silicatosis is the name given to a non-nodular, non-progressive form of fibrosis of the lungs that follows exposure to various silicates other than asbestos, like shale, feldspar, talc, etc. These cause comparatively harmless, inert deposits in the lungs.

working environment exposed to toxic dusts. It is far more important to reduce the amount of toxic dust in the air which the worker breathes, by means of enclosure or exhaust system methods.

(To Be Continued)

WELSHARD LENSES

will really take a beating



WELSHARD CLEAR LENSES

are super-hardened and exceed federal break test requirements by 100% or more. They provide maximum protection for all whose work subjects them to impact hazards.

A-Type—flat B-Type—1.25 curve
C-Type 6.0 curve
50 mm Diameter—Beveled
Fit Spectacle Frame or Cup-Type Goggles

WELSHADE P-Type Absorptive Protective Lenses

For impact protection and preventing injury from visible or invisible rays as specified by Bureau of Standards. Desirable for blacksmiths, firemen, foundry workers, welders' helpers, metal pouring, etc.

50 mm Diameter—Beveled
For Spectacle or Cup-Type Goggles
Shades 1.5—1.7—2.0—2.5—3.0

WELSHWELD WELDING GLASS

For complete protection from intense visible rays, infra-red and ultra-violet rays encountered in welding. 50 mm diameter.

Shade 4: for same uses as P-Type 1.5 to 3.0

Shade 5: for light gas cutting and welding and electric spot welding.

Shade 6: for gas cutting, medium welding and arc welding up to 30 amperes.

M-TYPE WELDING PLATES—shades 8-10-12 for heavy acetylene, and electric arc welding from 75 to 400 amperes.

HIGH BAR SPECTACLE GOGGLE

Light and strong, with side shields of perforated metal, green or clear acetate, or leather.

CUP-TYPE COVER GOGGLE

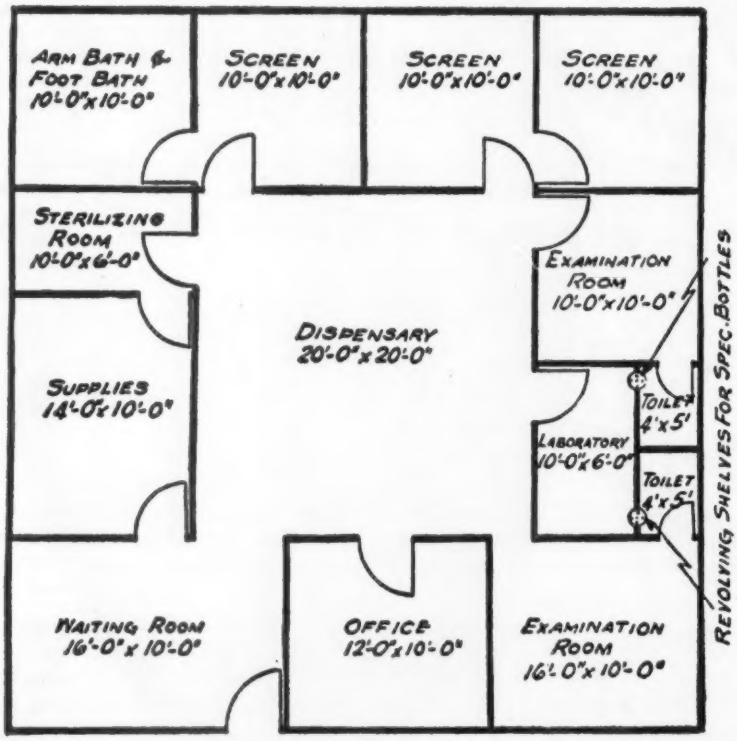
Chippers' or welders' goggle, depending upon lenses used. Fit comfortably over corrective glasses.

WELSH MANUFACTURING COMPANY

68 TROY STREET — PROVIDENCE 9, R. I.

A Health Program for Small Plants

Good Plant Health Is Just Plain Good Management



1. Medical service at reasonable cost is available.
2. Actual field experience O.K.'s regular medical service.
3. Medical service decreases lost time due to accidents.
4. Plant medical service reduces labor turnover.
5. Union councils generally approve the plan.

In each participating plant—or in one central to several in close proximity—a first aid dispensary should be set up. It is not enough to attempt a medical service in any old corner of the plant. The American Medical Association's Council on Industrial Health is the source for this compact medical unit layout.

There is a definite trend toward adoption of health and medical programs for employees of small plants. These plans are found to be practical and inexpensive. They ultimately reveal the relationship between good plant health and good plant management.

A HEALTHFUL plant as reflected by the physical condition of the employees is no less important to the financial status of any enterprise than is an orderly plant as reflected by wsie building management.

The possibility of industrial health coverage in smaller plants is now within range of organizations which employ from 70 to 700 workers.

Prominent in promoting small plant medical programs are industrial communities such as Philadelphia and Williamsport, Pa., Long Island City, N. Y., and Los Angeles, Calif. Here controlled experiments for adequate health services in small companies have been made to determine exact costs of such programs.

In metropolitan areas the local civic and governmental agencies, (i.e., local Chamber of Commerce Health Committees, U. S. Public Health Service, American Medical Association) sponsor the plan and assist in establishment of plant health services. These include suggestions and recommendations as to an outline of small plant medical service organization: the action necessary for putting it into effect, the selection of physician and nurse, the method of fixing professional fees, and how to go about the provision of quarters and equipment.

In some communities, however, several small plants band together in independent schemes which offer services under a common medical welfare policy.

Any of the following methods is feasible to fit varying conditions:

A—A general practioner interested in industrial health is hired by management on an hourly basis where his services will satisfy the needs of small industries.

B—Management hires a physician who fills his time completely with hourly engagements in industrial

health, thus becoming a full-time industrial physician.

C—A physician conducts a dispensary in a building housing several industries, supported on a per capita subscription basis. Or management of a factory building containing several industries contracts with a physician to supervise a dispensary in a space set aside for the purpose.

D—A central dispensary is established in a neighborhood of a group of small industries, and is run by a physician with the aid of a full-time registered nurse.

But what answers are there to questions which might logically convince the small plant operator, or group of operators, of the possible success of undertaking any of these projects?

Here are a few:

1—*What medical service is available to a small plant at reasonable cost?*

Medical experience in industry demonstrates that the employer can provide satisfactory medical service, i. e., pre-employment and physical examinations, emergency treatments, including routine chest x-ray, serology tests, hemoglobin tests, urinalysis, etc., at average expenditures below the $35.00 per year per worker spent to cover industrial accidents.

Valid studies to determine costs in which small plant medical department quarters and equipment were considered as capital items, revealed that initial costs ranged from $550 to $3,667 depending upon the desires of individual plants. On a 10 year depreciating basis, this amounts to $55 to $360 per year. Operating costs of medical supplies run between $5 to $10 per month with $5-$10 per hour physician's pay for in-plant service on an hourly basis. Nursing service amounts to about $1.10 per hour. Total annual cost of health services in small plants averages about $2.00 per $100 of payroll in establishments employing less than 500 workers with gradual decreases as the number of employees increases.

2—*What is the experience of plants which now have medical service with respect to accident frequency, absenteeism, and compensation?*

The worth of health programs has been proved to 2,064 companies which have instituted them by overall *reductions* of 44.9% accident frequency, 29.7% absenteeism and 28.8% compensation insurance premiums according to valid figures of a National Association of Manufacturers' survey covering these specific questions.

3—*Will medical service decrease costs of lost time due to accidents?*

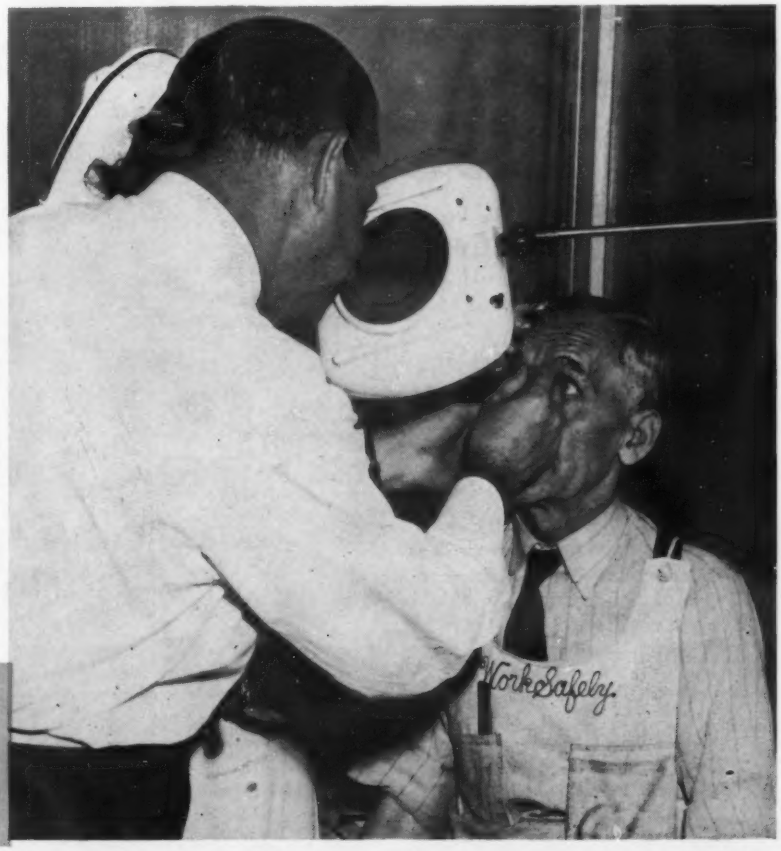
Local state surveys show that of some 1500 lost-time accidents, 300 developed infections due to carelessly-treated minor injuries, with an average medical cost of treating the ensuing infection at $40.00. This did not include lost man-hours of pay.

4—*Will plant medical service reduce labor turnover?*

Since this condition is affected by other factors no sure method is available for measuring the effect of health programs. However, the National Association of Manufacturers' Medical Advisory Committee, querying 2,064 industries, revealed specific reductions of 27.3% in labor turnover was found attributable directly to the institution of medical service.

5—*What is the labor union experience of plants which now have a medical service?*

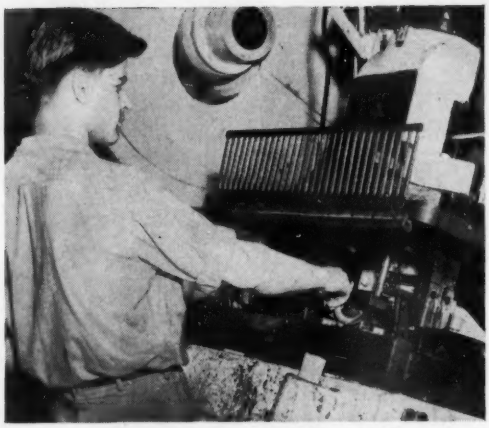
Submitting detailed plans to union councils has proved a valuable asset to allay possible suspicion on the part of local unions that management is attempting a project which might embarrass or interfere with the rights and privileges of union members. The plant medical program is successfully presented as something which must be done *with* the worker and not *to* him.

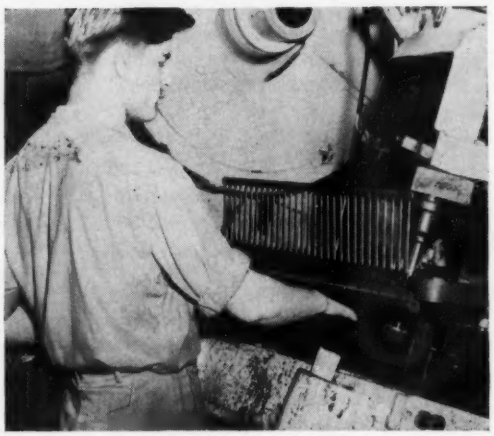


The cost of industrial medical service per employee has been running from $4.50 to $11.00 per year. It is obvious that this cost item is emphatically a "buy" as compared to the loss of time, morale and efficiency which follow unorganized health conditions.

POWER PRESS SAFETY *Tips*

PART III — IN A SERIES ON GUARDING OF POWER PRESSES





(*Photos: Ohio Industrial Commission*)

THE top photo shows a press in its open position with the guard in its "up" or open position for feeding material and removal of the finished work.

The lower photo shows another piece in the die and the gate or barrier down on the operator's hand, the operator having failed to remove his hand before stepping on the foot pedal at the right front of the machine. Due to an interlocking device between the foot pedal and the clutch, this press has failed to react and will not do so until the operator has completely removed his hand, for with his small finger between the gate and the block on the bolster plate, the clutch will not go into action.

A non-repeat feature of this guard limits the press to a single stroke each time the treadle is tripped.

This guard has been developed for "second" operation jobs, i.e., for blanked or stamped pieces on which subsequent operations are to be performed by hand feeding the parts in between the dies. On first operations such

● The durability of Hillyard Floor Treatments is measured by their Hi-Quality and the fact that for nearly a half Century they have given lasting satisfaction in the protection of all types of floor surfaces and in economy, time saved and labor costs reduced.

● There is a Hillyard Floor Treatment Specialist in your community ready to give advice on any floor treatment or maintenance problem . . . write or wire us today . . . no obligation.

THE HILLYARD COMPANY

DISTRIBUTORS: HILLYARD CHEMICAL CO....ST. JOSEPH 1, MO... BRANCHES IN PRINCIPAL CITIES

370 TURK ST., SAN FRANCISCO, CALIF.

1947 BROADWAY, NEW YORK, N. Y.

as feeding strip or sheet material or in conjunction with dial, slide or spout feeds, the guard can be rendered inoperative for the time being and enclosure guard, used either on the press or on the die itself. Or this guard can at times be used as a stationary barrier on such first operations.

This guard, as is true of several other types, gives good protection with fast and accurate operation, with freedom of movement for feeding and removing work, as well as a good view of the dies and the work being performed.

With this guard the operator's hand is not endangered by being caught between a power operated gate and the lower die, bolster or bed plate. For this gate guard is actuated by the foot treadle and has no connection whatever with the press ram.

Press Repeating

Springs that have broken in several pieces have been allowed to run in that condition for years. Those who permit this kind of press maintenance should realize that the cost of the average press accident in compensation alone is approximately $580.00, and that the cost of a new spring is only a few cents.

Stop plates may be entirely worn out, with but one remaining plate having enough power to operate the ram. The ram will come down on the work and dwell until the plate that will hold comes around and drives the die. A press that falters and does not make a continuous revolution when the pedal is pressed, should be shut down at once. The clutch pin and stop plates should be replaced with new ones secured from the manufacturer or ground until there are good square surfaces on the driving side. All the plates should be replaced or ground. Never allow one with a worn surface. If you do, there is great danger that the press may repeat without the operator's pressing the pedal.

You may find presses with only one clutch pin working, because of broken springs. This of course cuts down production and makes the press dangerous to operate. Broken springs often force the pin out only a quarter or half way, and tend to bend or break the pin as the load is taken only at the end. A thorough and regular inspection of the clutch springs should be made, and those that are broken or show signs of wear should be replaced.

Many times the knockout cam is found to be so badly worn and galled that no amount of spring pressure is sufficient to hold the cam in place and draw the pin. There should be an angle of 3½ degrees on the cam and on the slot in the pin where the cam engages. With this angle the cam is drawn towards the shaft, and practically no pressure is required to hold the cam in position. If this angle between the cam and the pin is worn off, no amount of pressure will hold the cam in place and the press will repeat.

If the crankshaft is five degrees before dead center and the clutch continues to make a clicking sound, the press should be shut down immediately. Many operators attribute this to a tight brake and in an effort to eliminate it loosen the brake to a point where the ram is very likely to fall with the press standing still.

(To Be Continued)

Check NEO-CORD against all other safety soles and heels. You'll agree that for non-slip protection in all conditions, for comfort and long wear in a word, it's NEO-CORD. Genuine Neo-Cord soles and heels are manufactured only by Gro-Cord Rubber Company, Lima, Ohio.

ARE YOUR SLIPS SHOWING?

TRADE GRO-CORD MARK

BOTTOMS THAT ARE TOPS IN SAFETY

SAFETY *Doubles in Brass*

This month's Plant Picture Story highlights an unusual safety record in metal fabricating operations.

BOTH employees and management of the Brass Fabricating and Cupping Department of the Western Cartridge Company, Division of the Olin Industries, Inc., East Alton, Illinois, look with a great deal of personal satisfaction upon their latest departmental accident-free record, now running well over four months.

Compared to last year's national averages for similar operations over the same length of time, this segment of the work year carried on without a disabling injury ranks as an unusual feat. The accident-frequency rate for the Brass Fabricating and Cupping Departments at the Western Cartridge over this period rated .64 as measured against the national industry average of 14.64.

These two highly mechanized departments are engaged in making hundreds of different metal products ranging in variety from small pencil tips to highly stylized hub caps for automobiles. Here 650 safety conscious and highly skilled employees work with various sized punch presses, cut-off machines, forming machines, cleaning and plating equipment.

Maintenance of accident-free production in this department depends upon strict adherence to safe operating rules and implicit utilization of both personal and machine protective equipment. The departmental use of acids and caustics for cleaning of metals also demands careful handling and efficient work procedure.

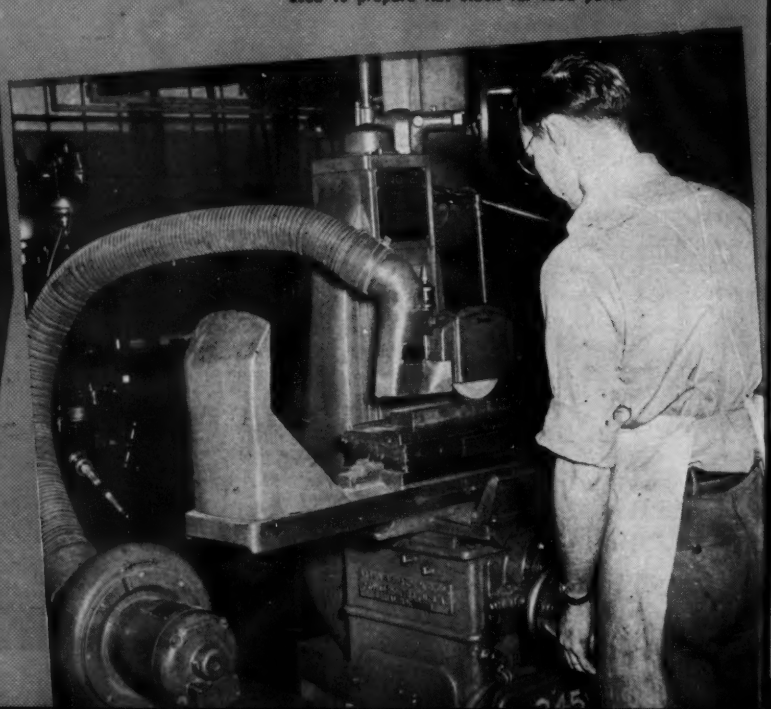
Ample health and safety facilities are provided to handle the hazards inherent in the fabricating work carried on. For example, in the manipulation of surface grinders, operators are required to wear safety glasses for eye protection, even though the grinding machines are equipped with grinding wheel guards. Exhaust systems are also attached to these machines, making certain of employee protection against dust hazards.

Press Protection

On all assembly presses in the manufacture of parts for automatic pencils, operators are trained to keep hands and fingers well away from the press rams even though these parts are adequately safeguarded by specially designed front guards. In addition, fly wheel guards are employed on all presses for protection against injury from contact with moving machine parts. Metal guards are mounted on the front and back of the Ferracute presses which

Annealing furnace operator charging electric furnace is guarded against hazards by protective outerwear garments, safety shoes and glasses. Note the safety warning sign behind furnace.

Health protection is reinforced here by exhaust doors and ducts. In this particular case they carry off dust at point-of-operation on surface grinders used to prepare flat stock for feed parts.



AT WESTERN CARTRIDGE

form oval parts for cigarette lighters. Safety glass guards fronting the press feed area on these machines offer an extra measure of protection to operators at all times.

Forming "beads" on small metal parts involves the use of header machines. By incorporating some safety engineering practices on these 2½ headers it is now unnecessary for machine operators to keep their hands near the moving parts of the machine. Automatic chute feeds have been adapted to handle this feeding operation. Top and flywheel guards are additional standard equipment used for protection against hazards around continuously moving parts.

Personal Protective Aids

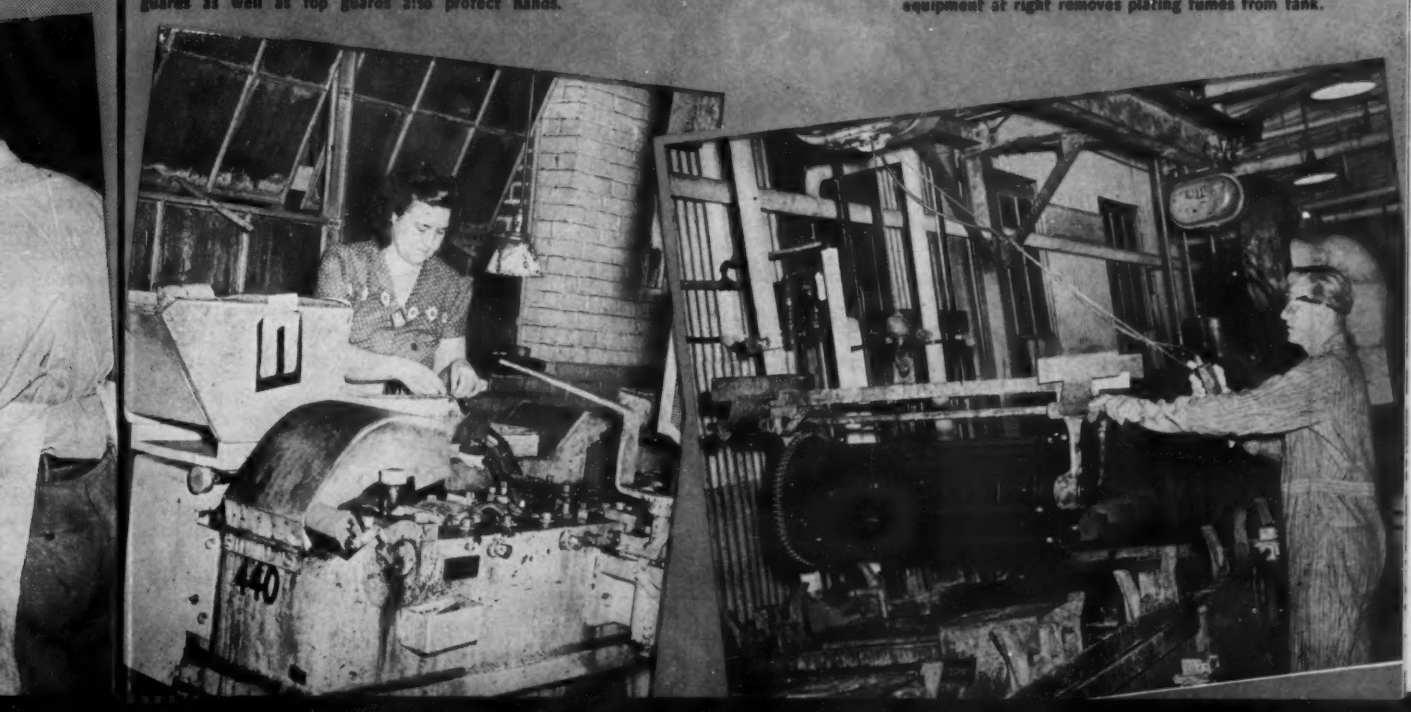
In operating the automatic cup washer machine which performs the "wash and trim" operation, precaution against possible accidents caused by falling loads of metal parts as they are being dropped into washing barrels must be taken. In the operation of these machines used to wash, dry and box cups automatically, it is required that the operator use safety goggles, safety shoes and protective clothing designed to guard against splashing caustic materials used in the process. Where movement and hoisting of parts takes place, safe loading procedures are in effect. Operators are required to wear plastic face shields as protection for face and eyes. Wearing of proper safety shoes to guard against smashed toes is also a safety requisite.

Operators of electro-nickel plating machines are provided with plastic face shields for protection from possible acid splash to face and eyes. Tanks and machines are efficiently exhausted. For complete body protection rubber gloves, protective clothing and use of safety shoes are required. The electric annealing furnace operators have complete coverage with personal protective equipment including goggles, safety shoes and the necessary outerwear to guard against heat hazards. Safety signs conspicuously posted near the furnaces remind operators to replace furnace lids after operations have been completed.

Keeping the safety record high and the frequency rate low in the Brass Fabricating Division of the Western Cartridge Company is ultimately accomplished through the co-operation of skilled workers doing their jobs in a safe and efficient manner . . . a successful formula for making and maintaining outstanding safety records in any plant.

Built-in finger protection is incorporated into this bead-forming header machine. Note chute feed safety attachment to left. Wire mesh flywheel guards as well as top guards also protect hands.

Possible splattering of acid used in electro-nickel plating operations is amply covered by use of plastic eye shield, hand and body protective aids. Exhaust equipment at right removes plating fumes from tank.



MEN and MATTERS (*Continued from Page* 13)

SLOGAN SUGGESTION . . . The Koronet Hair Guard made by the Regal Manufacturing Company, Chicago, not only gives protective coverage for the hair for women working around machinery, but has a glossy Ethofoil eye shield that can be imprinted in color with any trademark, name or slogan and can be worn turned up or down. It provides an excellent opportunity for tying in safety slogans with a particular hazard or with a safety campaign in the plant. The guards are adjustable to any head size and Regal will provide a free sample, literature and prices upon request. One of the sales points for the guard is that it protects against "falling hair," but that is after it has become loosened, unfortunately.

NEW SILICOSIS LAW . . . Trend of the times is a new bill passed recently by New York State which will eliminate ceilings on compensation claims and medical care in silicosis and other dust disease cases. Applying only to total disability and death claims, the new law lifts the present $7,500 ceiling and eliminates the five-year time limit of disease contraction in death cases. Liability beyond that of the first 260 weeks is transferred to a special workmen's compensation system fund.

NEW INSECTICIDE FILM . . . "Our Constant Enemy" a 16 mm. color film has been released by Rohm & Haas Company, Philadelphia. The methods and equipment used by skilled pest control operators in industrial insect problems are included and pictured in typical operations. The film may be obtained by organizations interested in insect control by writing to Rohm & Haas for schedule and other details.

DIRT CHECK . . . A new and scientific system of determining soil removal through the use of fluorescent-impregnated soils and ultraviolet lamps is being used with great success by the Sugar Beet Products Company of Saginaw, Michigan. Standard soil mixed with fluorescent material and applied to the hand becomes clearly visible when viewed under black light. Tests of several leading industrial hand soaps proved that their Formula SBS-11 removed soil completely in record time.

It is believed that the same technique will be employed by industrial hygienists in further study of dermatitis conditions and their cause. An outline of procedure is available upon request.

SUMMER HINT . . . The Gebauer Chemical Company of Cleveland announces that it is packaging its Tannic Spray for sunburn, burn, and poison ivy relief in a convenient light-resistant amber glass bottle which is closed by means of a dispensing cap. The cap permits the solution to be sprayed from the bottle directly upon the afflicted area merely by depressing a lever. When not in use, the cap serves as a hermetic seal to prevent loss or contamination.

This may answer the prayer of many an industrial nurse plagued by Monday morning sunburn troubles in the First Aid Room. The manufacturer claims the spray promotes healthy tanning.

DOCTOR IN INDUSTRY FILM Department of Public Relations, General Motors Company, Detroit, announces a 16 mm. sound film showing gratis to industry. Produced by GM, the motion picture "Doctor In Industry" deals in large part with the history of industrial medicine from its humble beginnings at the opening of this century up to the present day.

TOTE BOX HINT . . . Merrill Brothers, forging manufacturers, Queens Borough, New York, have developed a unique combination with two of their tools, which helps out during the scarcity of tote boxes. With the aid of their steel drum cut-

TOPS IN COMFORT AND SAFETY

Featuring DOCKSON'S popular 1120 model, all purpose, Face Shield.

• Feather light but sturdy. • Spark and fire resistant construction. • Clear, undistorted vision. • Metal bound, full vision window. • Ample ventilation.

FACE SHIELDS • GOGGLES • HELMETS FOR EVERY NEED

Write for complete Welding or Safety equipment catalog.

Dockson CORPORATION
3839 WABASH AVE. • DETROIT 8, MICH.

ter, the top of any steel barrel is inexpensively converted into a tote box for storing or conveying small parts or loose material anywhere in or between plants. Then, by means of the other member of the "combination," a double-action forged clamp for lifting plates, angles, barrels, kegs, etc., these cut-away top barrels are quickly lifted without back strain and conveyed wherever wanted.

CALENDAR OF COMING EVENTS

National Fire Protection Association Meeting, May 26 to 29, Palmer House, Chicago, Ill.

Annual Regional Philadelphia Safety Conference, June 4 to 6, Bellevue Stratford Hotel, Philadelphia, Pa.

American Society for Mechanical Engineers Semi-Annual Meeting, June 15 to 19, Chicago, Ill.

All Maryland Safety Conference and Exhibit, June 16, 17, Lord Baltimore Hotel, Baltimore, Md.

National Safety Congress and Exposition (35th), October 6 to 10, Stevens Hotel, Chicago, Ill.

International Lighting Exhibition, November 3 to 7, Stevens Hotel, Chicago, Ill.

Systematized Sanitation

effects a DOUBLE SAVING!

Gerson-Stewart's simple plan of Systematized Sanitation accomplishes an important saving in your plant as it helps lower manufacturing and maintenance costs. Your plant becomes a more orderly place in which to work, and more effective use is made of your own housekeeping personnel. Write today for our latest illustrated booklet.

Systematized Sanitation enables your present labor to do more tasks—better!

SYSTEMATIZED SANITATION

The GERSON-STEWART Corp.

LISBON ROAD · CLEVELAND, OHIO

Here's the Handy DAYTON "ROLL-ALONG" SAFETY LADDER

IDEAL FOR THE STOCK ROOM

. . . The Dayton Roll-Along Safety Ladder with its rubber tired swivel casters can be speedily moved in any direction with practically no effort.

Safety shoes with renewable treads hold ladder permanently and safely in place while ladder is occupied.

Constructed of tested airplane spruce throughout and reinforced with steel braces for additional safety. Folds compactly for convenient storing. Available in sizes 3-ft., 4½-ft. and 6-ft.

Elevating auxiliary platform which folds back in main platform adds height if desired.

These ladders are being used in many of America's largest plants. See for yourself! Write today for bulletin.

For Safety's Sake . . . consult our SAFETY DEPARTMENT . . . we have the complete line of safety equipment for your every requirement.

DAYTON SAFETY LADDER CO.

2337 GILBERT AVE., CINCINNATI 6, OHIO

For complete information, just check any or all items listed, and send us the coupon.

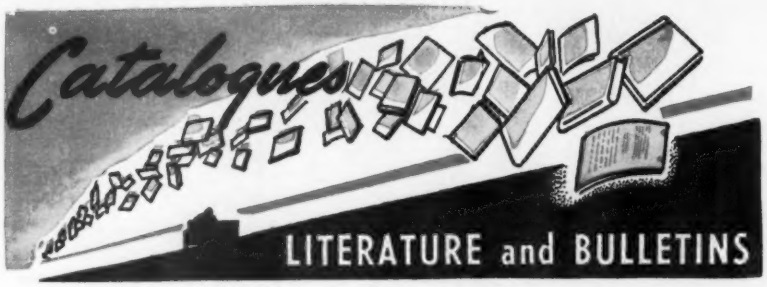
MAIL NOW

DAYTON SAFETY LADDER CO.,
2337 GILBERT AVE., CINCINNATI 6, OHIO
GENTLEMEN:
WITHOUT OBLIGATION ON MY PART PLEASE SEND ME FOLLOWING CHECKED BULLETINS:

.....SAFETY LADDERS SHOES	.....SAFETY GASOLINE CANS	.....SALT TABLETS & DISPENSERS
.....SAFETY LADDERS	.....OILY WASTE CANS	.....SAFETY GOGGLES
.....SAFETY CLOTHES	.....EXCELSIOR CANS	.....GLOVES
.....ROLL-ALONG LADDERS	.....WATCHMEN'S CLOCKS	.....FIRE BUCKETS
.....FIRE HOSE	.....ACID PUMPS	.....ROCK UP RACKS
.....FIRE EXTINGUISHERS	.....RESPIRATORS AND PARTS	....."PLY"
		.....EYE SHIELDS

(Name).....

(Company)..... (Address).....



The publications featured on these pages were written by experts. They may be obtained without charge. To obtain these use the postcard bound into this issue.

FL 595—Dust Control . . . A new 23-page illustrated booklet compiled and issued by American Air Filter Co., Inc., manufacturers of Air Filtration and Dust Control equipment discusses various types of industrial dust problems and typical application of AAF air filters to problems of protection for men, machines and materials.

FL 596 — Fire Prevention . . . American-La-France-Foamite Corporation illustrated brochure, "What You Should Know About Modern Fire-Fighting Devices" describes the many different types of Alfco fire fighting units and makes recommendations for the correct equipment to use according to the hazards involved.

FL 597—Spray Booths . . . A new eight page folder from Schmieg Industries Inc., describing typical installations of the Schmieg Centri-Merge Spray Booths individually engineered to fit requirements of any spray painting operation or plant.

FL 598—Washroom Service . . . Scott Paper Company has available a 24-page booklet containing suggestions for improving locker and washroom personal service facilities in industrial plants. Includes information on equipment, traffic flow, and ease and economy of operation.

FL 599—Fire Appliances . . . Catalog of the George W. Diener Manufacturing Company listing fire extinguishing equipment, safety cans and sundry appliances for industrial plant fire protection purposes.

FL 600—De-odorizing . . . Bulletin 106-A, from the W. B. Connor Engineering Corp., pertains to design data and application of Dorex Air Recovery Panels for extracting odors and vaporous impurities from recirculated air wherever odors generated by normal human occupancy and other activity would otherwise demand costly ventilation equipment.

FL 601 — Acid Hauling . . . A new four-page catalog shows application and instructions for use of Flexite-rubber pouring buckets and dippers. Used mainly for safe handling of acids, corrosives and explosive liquids the products are available from the B. F. Goodrich Company. Ask for Catalog Section 9425.

FL 602—Dust Collectors . . . Catalog describes products of the Torit Company, manufacturers of self-contained dust collecting units for removal of dust-laden air around grinding, cutting and polishing wheels. Ask for Catalog No. 31.

FL 603 — Slip-Proof Floor Compound . . . Sugar Beet Products Company has a pamphlet on their product, Formula SN-7, a compound designed to eliminate the hazard of greasy, oily, wet and slippery floors and stairs on industrial premises.

Washable UNIFORMS

Smart Work-a-Day Wear for Women

Keep production and inspection lines looking trim and up-to-the-minute in style—satisfy employee pride—with Moore newly-designed, well-tailored uniforms. Of beautiful, easy-to-launder Sanforized fabrics—all 100% cotton. Wide choice of lovely colors, priced attractively low. Write for illustrated folder showing new popular styles.

MOORE Work-a-Day WEAR

Our 40th Year 1907-1947

E. R. MOORE CO.
Department OH
932 DAKIN STREET, CHICAGO 13, ILLINOIS

Hand Safety that Speeds Work

Neoprene **Stanzoils**

with new positive-grip finger finish

YOU can't believe how amazingly sure-grip this new Pioneer finger reinforcement is till you try it—it provides new confidence and speed for workers. Add to that the extra protection of DuPont neoprene, as processed by Pioneer, in oils, acids, other harmful materials, to cut costly injuries. Add the fact that Stanzoils last 3 to 7 times longer than rubber — and you see your many advantages in Stanzoils. Write for catalog showing all styles, weights, sizes.

STANZOIL PIONEER

Synthetic Rubber Division
THE PIONEER RUBBER COMPANY
258 Tiffin Rd., Willard, Ohio, U.S.A.
Los Angeles

OVER 25 YEARS OF QUALITY GLOVE MAKING

The Pay Off: Tracking Down Hazards Through Eight States

By STANLEY OWENS
Safety Engineer
Tennessee Gas & Transmission Co.
Houston, Texas

THE duties of most safety engineers are usually under one roof — that is, in a single plant or factory where expanse and exposure are limited. Consider then, a roofless production line, over a thousand miles long, extending from the heat and plains of Texas to the mountains of ice and snow of West Virginia. Such a system is that of the Tennessee Gas and Transmission Company whose operations include 1,265 miles of all-welded pipe (most of which is 24 inches in diameter), eleven compressor stations and a dehydration plant, all of which deliver at approximately 100% load factor two hundred million cubic feet of natural gas daily across country to customer's distribution systems in the industrialized areas of the East.

To gain a better idea of some of the problems in connection with our injury prevention program one must further consider the extent and diversity of our operations. About 800 employees shepherd the high pressure natural gas over eight states via the company lines. Employees travel long distances over highways, with attendant danger of automobile and truck accidents. They walk the pipe line through remote areas and are subject to hazards of snake bites, poison ivy, landslides and falls off cliffs. They work at under-water crossings and in boats; they are high above the ground on aerial river crossings, and perched on top of cooling towers. They also work in buildings comparable to any industrial plant and subject to the same type accidents. Thus, it is easy to see that the safety department of an extensive gas line operation has to cover all types and degrees of exposure.

Getting the plan to function with tangible results called for establishing five fundamental safety organizational controls. They are:

(1) Employee selection and training program.
(2) Formulation of accident prevention regulations.
(3) Safety equipment.
(4) Accident analysis.
(5) Selling the safety program.

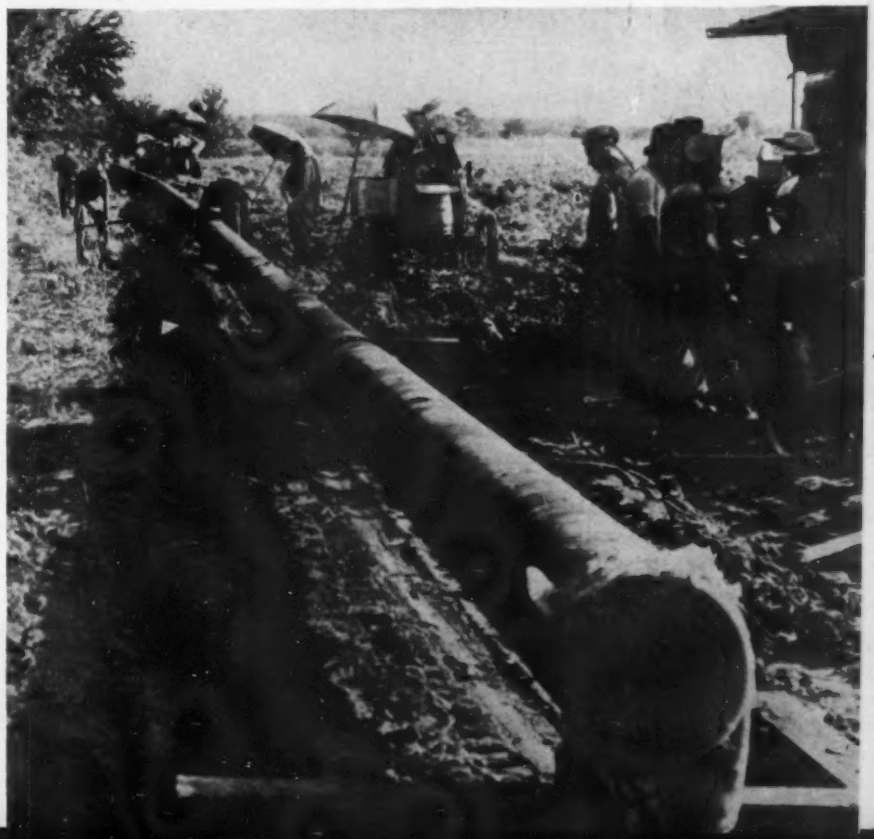
Proper selection and training of employees is the first principle of the program. Due to the distance from the main office to each field operating office, it is necessarily the responsibility of the field superintendent to select, hire and train his own employees. In the selection, a complete pre-employment physical examination is mandatory. After a man is hired, it then becomes the responsibility of the hiring supervisor to implant in the man's mind the fundamental safety creed of the company.

Because thoughtfulness is a fundamental element in avoiding accidents it is desirable to have not more than a bare minimum of required safety rulings. Good judgment should supplement rules. Company stations are divided into restricted areas by large metallic "No Smoking" signs.

One simple and vitally necessary rule can cover this set-up. "ANY EMPLOYEE FOUND SMOKING IN A RESTRICTED AREA IS SUBJECT TO IMMEDIATE DISMISSAL."

Another fundamental and important rule: Before welding or burning work is done on any structure containing gas in any restricted area in compressor station, the company headquarters office must be notified and approval of proper procedure obtained. "ALL SUCH WORK, WHEN APPROVED, MUST BE DONE ONLY UNDER THE DIRECT PERSONAL SUPERVISION OF THE STATION SUPERINTENDENT."

Open field pipe laying, as illustrated here, demands different type accident control measures than do compressor stations or dehydration plants. Therefore, the safety program must be kept flexible in order that each preventive practice for risks and hazard encountered may be put into action where it will do the most good.



SKIN IRRITATIONS?

Let Us Help You!

If skin irritations are a problem in your plant let us send you a trial quantity of Tarbonis. In literally hundreds of plants Tarbonis has proved a real help not only in overcoming skin irritations that have occurred, but also in guarding against their recurrence. Pleasant to use—easy to apply —sure of workers' cooperation. Does not interfere with the work to be done. Use the coupon . . . now.

Send for a sample of Tarbonis NOW.

Are These the Irritants?

Cutting Oils
Chrome Dyes
Formaldehyde
Sodium Bichromates
Lime
Metal Dust
Chemicals
Urea and Phenol
Plastic Compounds
Brine
Acid-Type Foods
Foodstuffs
Chemicals
Reagents
Naphtha
Soaps
Detergents

THE TARBONIS COMPANY
4300 Euclid Avenue • Dept. OH • Cleveland 3, Ohio

Please send TARBONIS sample and literature to:

Company.....

Address.....

By.....*Dept*.....

NEOPRENE HOOD IMPREGNATED

WORK GLOVES FOR *Safety* PLUS!

HOOD Work Gloves' scientifically compounded, specially bonded *Neoprene* surface *protects vital hands* from abrasion, acids, alkalies, chemicals, greases, oils, and other irritants. They keep hands safe, clean and dry. Special curving to the natural contour of the hand insures dexterity. Superior vulcanization by time-tested techniques results in still-usable gloves when others are worn out. Gauntlet model protects wrist and lower arms and the reinforced thumb crotch assures extra wear at this all-important point. Both models are Canton-flannel lined for added comfort. Let HOOD'S fifty years of leadership in the rubber industry be your guide to better work gloves. Since 1934—America's *Safety-Plus Glove.* Ask your jobber.

HOOD RUBBER CO., WATERTOWN, MASS.
A Division of the B. F. Goodrich Company

Safety equipment used in control of pipe line accidents readily divides itself into four categories, the first of which is:

Machine Guards — All of our machinery and equipment is guarded to meet the standards of various insurance codes and state laws.

Personal Safety Equipment — We keep on hand at all locations a complete complement of safety goggles for all eye exposures. Welders are supplied with the latest approved type hoods.

Fire Fighting Equipment — We have gone all-out for the best suited fire-fighter equipment. The latest type of fire extinguishers, hose reels, nozzles and fire hydrants have been installed. We maintain a complete high pressure water main system strategically located to service fire hydrants. Each location is equipped with a Navy-type approved asbestos suit for possible use in fire rescue or combat work. Automatically released vertical rolled fire blankets are placed at strategic locations, to enable the lone employee to smother a fire that may have ignited his own clothing.

First Aid Equipment—Each station is equipped with first aid kits for each field crew. In addition to this we have the best type of burn treatment available at each office in sterilized spray guns that can spray a man's entire body in a few seconds with this life-saving emollient.

Accident Analysis; Programs

Intelligent direction of pipe line safety work demands an accurate knowledge of facts surrounding each accident. It is imperative that a set of records always be maintained following accepted national standards.

It is only by continued vigilance and persistence of effort that success in putting the safety program across can be attained. At periodic intervals safety memorandums are sent out to field supervision covering current pertinent safety subjects. Each month a page of our company house organ devotes space to the "Safety Record—How It Stands." The record summarizes each lost time accident for the month and gives a description by supervision of how the job should be done safely.

Clean Cool DRINKING WATER

PORTABLE SANITARY

MEETS REQUIREMENTS OF PUBLIC HEALTH AUTHORITIES

FOR CONSTRUCTION AND MAINTENANCE CREWS

The Dobbins PORTABLE SANITARY DRINKING FOUNTAIN protects the health and strength of workmen on any job... anywhere... with cool, clean drinking water—at the press of a button! Aids railroad, highway and building construction, repair and maintenance crews... miners, and all other workmen on jobs where a permanent, sanitary drinking water supply is *not* available. Banishes germ-spreading practices such as use of "common" drinking cups, open pails, dippers, etc. Four gallon capacity tank is fully insulated. Air pressure for instant flow of water is supplied with a few strokes of the pump.

DOBBINS MANUFACTURING COMPANY
DEPT. 529 ELKHART, INDIANA

DISTRIBUTORS: Some territories are open for this fast-selling item. Write for complete details.

FOUNTAIN AND ACCESSORIES • • AVAILABLE FOR IMMEDIATE DELIVERY

No. 18 — Dobbins Superbilt *Portable Drinking Fountain* less all accessories. Only..... **$16.00**

Salt Tablet Dispenser, 500 tablet capacity, extra..... **$2.75**

Adjustable, Waterproof *Carrying Strap*, extra..... **$1.15**

Spill Cup, to catch overflow when used indoors..... **$3.50**

Mounting Bracket, holds fountain to wall or floor of buildings, trucks, tractors, locomotives, etc.. **$4.50**

All prices F. O. B. Elkhart, Indiana. Circular on request.

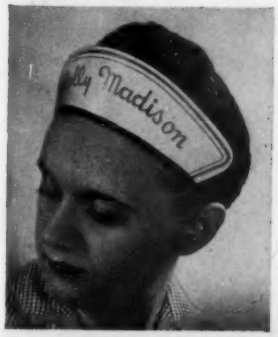
Dobbins Superbilt
PORTABLE DRINKING FOUNTAIN

Here's PROTECTION
Preferred by All Women Workers

KORONET HAIR GUARDS
VISOR EYE SHIELD STYLE

Available once again . . . a pre-war favorite with post-war improvements. Preferred by all women workers. Note these features:

- Protection Against Loosened Hair Falling or Getting Caught.
- Neat Attractive Glossy Ethofoil Eye Shield is non-inflammable.
- Comfortably Light, fits snugly, adjustable to any head size.
- Economical . . . needs no starching or ironing . . . pays for itself in laundering savings alone.
- Sanitary . . . allows for natural air circulation.



Added Advertising Value

Any trademark, name or slogan you desire can be imprinted on the shield in color.

Some Present-Day Users of KORONET Hair Guards

International Bakeries Corp.
National Dairy Products
Hydrox Corp.
Custom House Packing Co.
Union Specialty Co.

FREE SAMPLES — Write Dept. OC4 Today for Free Sample, Literature and Prices.

REGAL MFG. CO. 3203-05 ELSTON AVE. CHICAGO 18, ILLINOIS

Now... Safer Stamping at Lower Cost with...

"Nu-Grip" STAMPS

LETTERS
FIGURES
SYMBOLS

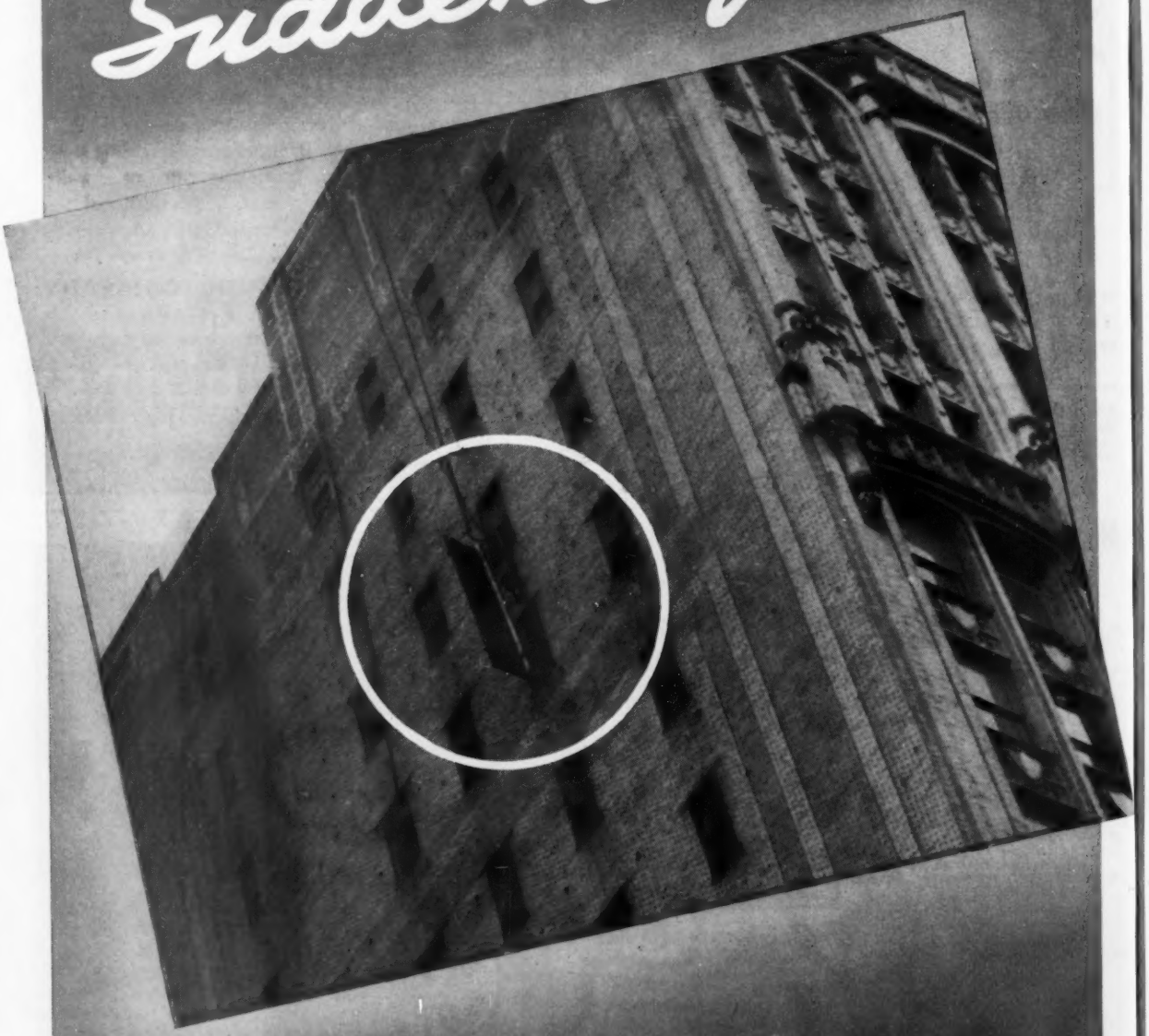
Stamps are made of "Safety" Micco alloy steel, on heavy duty blanks for all stamping applications.

- New Design gives positive finger grip.
- Grip holes at exact point for perfect balance.
- Give workmen "feel of security" when stamps are struck by severest hammer blows.
- Available in sizes from 1/32" to 1".
- Write for data and prices.

* Patent applied for.

M. E. CUNNINGHAM CO.
SAFETY STEEL STAMPS
91 E. CARSON STREET PITTSBURGH, PA.

. . . And Sudden Injury



You can guess at a moment's glance what happened here. It's a big city scene for which you can fill in your own characters and action any day. But it doesn't just happen on 19-story buildings, as in this case. A tipped scaffold on a two-story plant, a solvent tank, a water tower, boiler stack, or even in front of the sign over your plant entrance spells tragedy to some workman. →

← And Sudden Injury

MAX was glad his boy, Irv, was old enough to work alongside "the old man," now. Irv was 17, a husky kid. They made a good team. Teamwork is what counts when life is in the balance, so to speak. "We'll hang together, eh, kid?" Max used to joke.

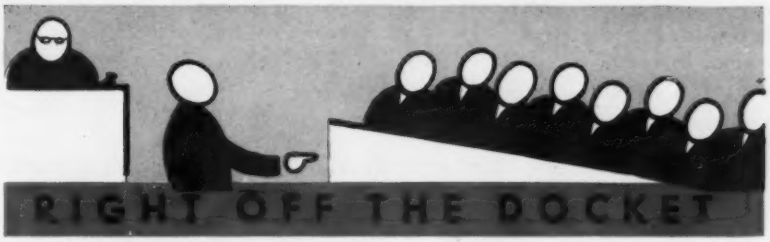
It was a fine morning for work, not too sunny. You don't spend too much time looking down when you have work to do in mid-air with only two-inch planks under your feet. A man can get dizzy just looking down from his porch roof sometimes. And a porch roof fall can kill you as dead as a fall from 19 stories up.

"It's not the fall that kills you," Max used to say. "It's the sudden stop." An old joke, but it applies to speed in any direction. Gravity gets you going at a speed of 32.16 feet per second per second. That's over 20 miles per hour at the end of only one second of fall. The only brake on that speed is air resistance. Any stop is bound to be sudden, and deadly.

The handrail felt good at the back. Max always gripped it hard when he moved around the swinging bucket. Just the grip was reassuring. Then it happened. One end of the scaffold swung free against the building in a sickening downward arc. Max saw his boy go hurtling down as he himself caught on to the handrail support. He never heard the boy's scream nor the thud seconds later on the pavement below. He was fighting his own battle of survival.

His knuckles flexed against the jolting of the swinging scaffold. Like an awkward pendulum it scraped arcs against the building. Max hung on desperately, sweating out the bounces. His feet braced to catch the diminishing shocks. He doesn't remember how he did it, but he was there when the swinging stopped. He was there for 10 minutes. Ten agonizing minutes waiting for rescuers to reach a window from which they could pull him in to safety. The gaping hole shows they succeeded. Below, the boy's lifeless body was being moved away.

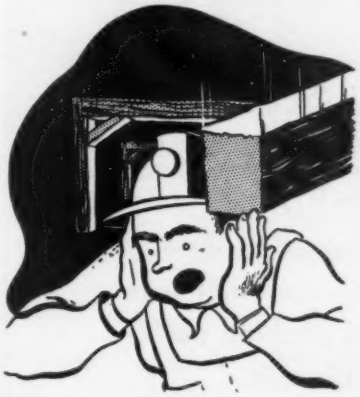
Ten minutes meant a lot of encouragement shouted from the windows and the sidewalks below. Ten minutes, even one minute, of extra precaution and Irv might still be alive.



The trend of litigation on workmen's health and accident compensation is reflected in these briefs on the latest and most representative cases coming to trial in the intervals between issues. Familiarity with this trend is important to every industrialist. Clip cases and file for future reference.

Non-Complying Employer's Liability For Damage

McGUIRE was employed in a coal mine. While walking in one of the headings, he was struck by a falling tie. This tie had been placed up-



right on a pipe which fellow employees were engaged in bending, and, through what may well be considered an act of negligence on their part, it was allowed to fall upon McGuire as he was passing by. The tie struck him back of his left ear; he was knocked down, was dazed for a few minutes, rested for a short time, and then resumed his work. The blow raised a lump of about a half inch in height and from then on he suffered considerably from headaches, but he did not stay away from work nor even consult a physician.

Twenty days later, while suddenly turning around in one of the mine headings, he accidentally struck his head against a protruding rock, the injury being to exactly the same place as before, back of his left ear, and causing a new lump to replace the former one which had meanwhile subsided. Then for the first time he visited a doctor.

He was unable to work because of alleged headaches and dizzy spells, with the result that by the time of a trial he had lost about $2600.00 in wages. The major portion of the jury's verdict ($2960) represents that loss which followed only the second accident. The company had not accepted the provisions of the Workmen's Compensation Act and was therefore subject to common-law liability.

It would be an injustice to impose upon the company a liability for damages which it was not shown to have caused. The most that McGuire can claim is that the company should compensate him for pain and suffering arising from the headaches endured in the period between the two accidents. Judgment reversed and a new trial ordered.

McGuire vs. Hamler Coal Mining Co.
Supreme Court of Pa. 11-8-46
49 At. Rep. 2nd series page 396.

Claims for Double Compensation

TWO MEN were members of a Deerfield Glassine Company "repair gang" in charge of a Mr. Sibley. The work involved the lifting of a "dryer roll," which weighed about four tons, from a paper making machine by means of chains attached at the ends of the roll.

After the roll had been lifted and held suspended for about half an hour one of the chains gave way and permitted the roll to fall back upon the machine, causing injuries to the two employees. Two types of chains were available for this work, described respectively as "tested" chains and "ordinary" chains.

The chain that broke was an "ordinary" chain, the welding of which gave way at the "grab link" or "ring." There was evidence that

the tested chains were to be used for heavy lifting. Sibley had been informed by one of the employees that one of the chains had a defective ring, the ring that broke. The witness suggested using "cable slings," but Sibley replied that they were not long enough and that the chains were good enough. The witness asked Sibley about using the tested chains, and Sibley replied, "Never mind. You follow me with them chains."

Were the two employees entitled to double compensation on the ground that they were injured "by reason of the serious and wilful misconduct" of one Sibley?

There was nothing in the record to indicate that Sibley knew of the defect in the welding of the "ring," or that the defect was readily apparent. The injury resulted from the broken weld and not from any other insufficiency in the chains used. Although stronger chains could have been used there was no proof of the actual capacity of the chain used or that it would commonly be incapable of carrying the strain, which in fact it did carry while raising the roll, and for half an hour afterwards.

Sibley could have been more careful. He took some risk in using the ordinary chain. But the risk he took was not so obvious nor so great as to render his conduct "serious and wilful," that is, practically speaking, wanton and reckless, within the established construction of section 28 of the Workman's Compensation Act.

The refusal of an experienced foreman like Sibley to accept the judgment of one of his gang does not appear to have been wanton and reckless. The record did not warrant double compensation.

Scaia's Case (2 cases)
Supreme Judicial Court of Mass.
Suffolk County, 11-1-46.
69 N. E. 2nd series, page 567.

Burden On Claimant To Prove Tar Injury

ALFRED THACKSTON was spreading a heavy tar in a parking area. The tar was applied at high temperature and gave off a considerable quantity of smoke and

fumes. At the end of the working day, Thackston's eyes smarted and burned. Five days later he went to a doctor recommended by his employer, who treated him for about ten days when, because his condition did not improve, the employer sent him to a Dr. Berke.

Dr. Berke attributed the impaired vision "to an inflammation on the inside of the eye" known as chorioiditis and uveitis. X-rays were taken to discover whether any foreign body was imbedded in the eye but none was discovered. Blood tests, a urinalysis and other tests were given, all of which were negative. However, one tooth was found with a root abscess. The tooth was removed and

THIS thin tool steel core
is welded between supporting walls of softer metal which wear down first, leaving the hardened core sticking out — always sharp because it is thin.

Any other spike, if made with only one kind of metal, will wear as dull as the full thickness of the spike.

Dull spikes are a hazard. Constant inspection and sharpening is expensive and does not fully eliminate the danger. SAFE-HI stops both the expense and the hazard.

SAFE-HI gives you many other exclusive features.

Other Safe-Hi Products

Pole Grips and Wall Grips to hold the top of your ladder

Safety Belts and Shock Absorbers for Safety Belts

Ask your safety dealer or write us for descriptive literature.

Safe-Hi PRODUCTS

ROSE MANUFACTURING CO.
1731 Arapahoe St., Denver 2, Colo.

a culture of the pus disclosed a streptococcus viridans infection.

There was some question as to whether the creosote fumes precipitated the inflammation of the eye which did result in blindness. Other medical experts who were called to offer their testimony, indicated a negative reaction to the claim of the petitioner that the fumes created the inflammation of the eye which subsequently ended in blindness. All the experts concluded that it was possible that the dental infection was responsible for focal reactions of the eye.

It appears that the more probable hypothesis was that the loss of vision was due to the disease of the tooth. Claimant having failed to prove his contention, claim was denied.

Thackston vs. Lansdell Co.
Supreme Court of N. J., 10-10-46.
49 At. Rep. 2nd series, page 141.

No Proof of Connection Between Employment and Dermatitis

FORREST JOHNSON during the month of May, 1945, was employed by the Mallory Company, Inc., as a janitor, doing general cleaning work at night. The company made batteries, parts of radios and so forth. Different kinds of chemicals were used in the rooms he cleaned, consisting of potassium cyanide, mercury of lead vitrolite and powders of different kinds, which made a lot of dust.

The claimant developed a breaking out on his legs, right below the knees, down to above his ankles. The skin died and peeled off. Then he woke up one morning, sick, weak, and nauseated and his legs were swollen. He did not work for a

14 Formulas ISOLATE MORE THAN 2000 SKIN HAZARDS

Industrial Dermatitis Is Stopped by PLY Creams and Liquids

PLY the before-work Protective Cream

"Apply PLY" has been the watchword for 15 years in safeguarding industrial workers against dermatitis. PLY provides such positive protection that it is referred to as the "invisible glove."

Send for our new, fourteenth edition, "The Answer to Industrial Dermatitis," the most complete reference book of its kind. This book provides detailed information for segregating and isolating more than 2,000 skin irritants.

"The Answer to Industrial Dermatitis" will prove especially helpful to Safety Engineers, Plant Physicians and Nurses, Personnel Directors, and Works Managers.

PIONEERS IN RESEARCH FOR PREVENTION OF INDUSTRIAL DERMATITIS

THE MILBURN COMPANY
3246 E. WOODBRIDGE ST. • DETROIT 7, MICH.

HOW TO BUY AND SAVE MONEY ON
INDUSTRIAL RUBBER GLOVES

FIRST write for Surety's Industrial Glove Selector — the handy, easy-to-use device that tells you the proper glove for most any job.

SECOND with the aid of the Selector, quickly match your job with the glove that will give greatest protection, longest life.

THIRD use Surety bulletins to select styles and sizes. Surety makes all kinds of rubber gloves . . . . your choice is sure to be RIGHT.

THE SURETY RUBBER CO.

CARROLLTON, OHIO

period of three months after which time he returned and did the same work as a janitor.

Thereafter, he went to numerous doctors who concluded that the claimant had a dermatitis venanata, which is an eruption caused by some external irritant which the individual has contracted and to which he is sensitive. The experts were unable to say whether the dermatitis was caused by something the decedent had contacted in his work or by something he had contacted in the ordinary pursuance of life.

There was no definite proof as to the cause of claimant's condition, in the opinion of the medical experts. The burden of proof, being upon the claimant, had to show a connection existing between the condition which caused his disablement and his employment. A recovery was therefore denied.

Johnson vs. P. R. Mallory Co., Inc.. Appellate Court of Indiana, 12-4-46. 69 N. E. Second Series, Page 757.

Dust and fumes don't get a chance to circulate in plants equipped with a Schmieg CENTRI-MERGE Eliminator. The moment dust or fumes develop from buffing, burring, grinding, polishing, curing or any other processing operation, they are swept up on an air stream that carries them back through ducts to a central Collection Unit. In the washing chamber of this Unit the CENTRI-MERGE high pressure centrifugal water action literally *scrubs* every last vestige of contamination from the air stream—cleans it so thoroughly that, in many cases, it can be recirculated back into the plant. That's why users are so enthusiastic about what CENTRI-MERGE accomplishes. Protects both workmen and work.

Consult Schmieg engineers regarding your problems of dust and fume control.

THE best AIR PURGE is CENTRI MERGE

Schmieg INDUSTRIES INC.
Engineers & Manufacturers
303 PIQUETTE AVENUE • DETROIT 2, MICHIGAN

Contractual Relationship Test of Whether a Personal Duty Resulting in Injury is Compensable Under Workmen's Compensation Act

IDA SMITH was employed by the University of Idaho as a hostess or house mother at Ridenbaugh Hall, a girls' dormitory located on the campus. She accidentally slipped and fell on the sidewalk in the city of Moscow, Idaho, and as a result of this fall fractured the neck of the left femur. This accident resulted in her death.

Under her contract of employment with the university she was held to be on duty 24 hours a day. All her meals were furnished her with the exception of breakfast which she ate in her room. Her suite was furnished. At the time of her injury she was purchasing some material for use during the course of the Christmas activities on the campus and had purchased a pound of coffee which she held in her hand at the time of the injury. She was on her way back to the home.

The question arose as to whether or not at the time of the injury she was performing a personal duty or whether at the time she was in the service of the university so as to bring her within the protection of the Workmen's Compensation Act. The rule would seem to be established that an employee does not step aside from employment when doing a reasonable but necessary act at the time and place to the end that the business of his employer may be properly conducted.

Mrs. Smith discharged her duties incident to the nature of her employment and in the interest and benefit of her employer. Therefore the injuries sustained by her were compensable. It was found that her errand was "a natural incident" of decedent's employment. Her personal errand was not forbidden and her service of employment was not interrupted.

The accident sustained in such conduct arose out of an employment as if one is actually doing work for which one is hired. Claim allowed.

Smith vs University of Idaho, et al.
Supreme Court of Idaho
June 14, 1946
170 Pac. Rep. 2nd series, page 404

Shop grime clogs pores, irritates the skin. Ordinary toilet soaps can't remove it. Pastes containing harsh abrasives scratch the skin, may open the way for bacterial invasion.

•

HI-SUDS prophylactic cleaner works safely, gently on the toughest shop grime—on cutting oil. A cream-colored powder, soft to the touch, HI-SUDS is adaptable to both shop and office use.

•

Just a little HI-SUDS on hands first immersed in either hard or soft water can be worked up instantly into a rich, fluffy lather. As it's massaged into the skin, detergent and absorbent ingredients go to work on grime . . . a quick rinse and that's all there is to this modern, pleasant clean-up job!

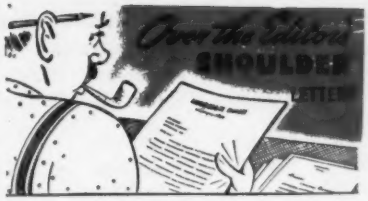
•

You buy HI-SUDS by the pound but it's used by volume—and it bulks big. DOLGE offers a choice of sturdy, attractive dispensers. See your Dolge Service Man and write for the booklet, "Stop Dermatitis."

•

HI-SUDS

The C. B. DOLGE CO.
WESTPORT, CONNECTICUT



Thanks, It Has Been

OCCUPATIONAL HAZARDS:

This is the first opportunity I have had to look over your new format and change in size of your periodical. I think it is an excellent improvement and I am sure that this change has been well received among your readers.—Edward B. Landry, Safety Director, Post Office Department, Washington, D. C.

Information, Please

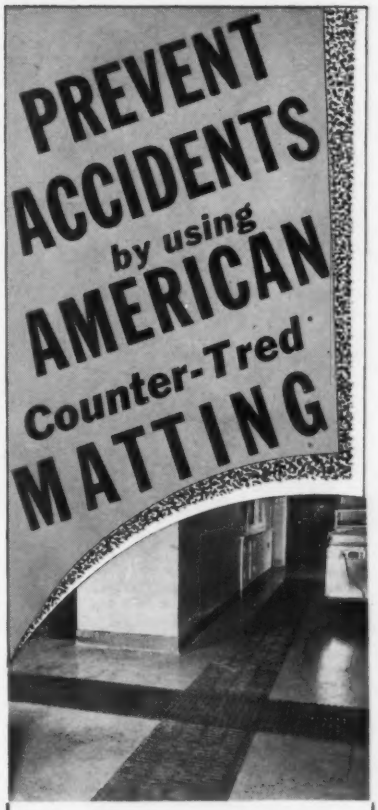
OCCUPATIONAL HAZARDS:

I have recently taken over the duties of "Safety Engineer" in this shipyard. This position while filled during the war has been allowed to lapse a great deal from the close of the war until now.

I have been unable to find any records or reference library at all in the plant and I would appreciate any assistance you could give me in the following matters: (a) Recommend a suitable reference library to cover the hazards and preventive measures in the shipyard industry. (b) Give me the publisher's name and address of all books and pamphlets in such a library. (c) Where I will be able to obtain suitable posters dealing in matters of safety. (d) What societies and preventive measure bureaus do you recommend we join as active members. (e) Any other suggestions that you may have in matters of safety education and organization which you might care to give me. — A. E. McKimmey, Welding Shipyards, Norfolk, Va.

OCCUPATIONAL HAZARDS:

Please send me all free literature available on safety and health and occupational information. This material will be used to supplement courses in Safety and Health and Occupational Information. This school has thirty-five students taking the course, Welding and Sheet Metal. All the students in this school are former servicemen. Materials on the hazards as well as opportunities in



A durable rubber and cord matting with a resilient non-slip surface for use in wet or slippery areas. Ridged bottom affords aeration and drainage. Easily handled for cleaning. Keeps the feet dry. ⅜" thick, 24" wide, any length.

—Also—

AMERIFLEX HARDWOOD LINK MATTING

"WALRUS HIDE" ROLL RUBBER MATTING

TUF-TRED TIRE FABRIC MATTING

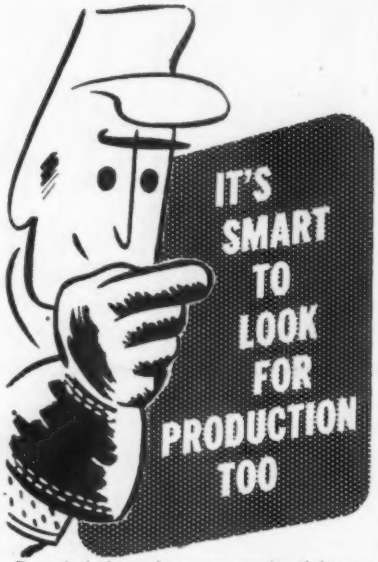
NEO-CORD OIL AND GREASE RESISTANT COUNTER-TRED MATTING

EZY-RUG RUBBER LINK MATTING

•

For prices and folder, "A Mat for Every Purpose" for promoting safety and sanitation and reducing fatigue, write

AMERICAN MAT CORPORATION
America's Largest Matting Specialists
1751 Adams St. Toledo 2, Ohio



Does it help to increase productivity so as to widen the gap between cost and selling price? That is the test all factory purchases must undergo today. Certainly it is the standard that should apply to safety apparel. Production as well as protection is the standard to which each and every Steel-Grip Protective Work Handler is designed. Comfort in wearing, freedom in use, the lessening of fatigue . . . these are Steel-Grip Work Handler qualities that *invite* the worker to produce more, faster. Insist on them . . . the result of 36 years' experience which has taken Steel-Grip into every field of industry and taught it *better* ideas that could be gained in no other way. Steel-Grip always means production plus protection. Insist on the genuine. Write for the Steel-Grip catalog today.

Standard Steel-Grip Finger Guard
No. 14314—Designed for use on small punch press work, buffing, burring, grinding, inspection, etc. Tough flexible leather with elastic webbing back. Eliminates minor but costly finger injuries. Special quantity discounts.

Asbestos Gloves
No. 210—Gauntlet glove, Underwriters' asbestos cloth. Roomy. Good wear and protection for hot jobs. Available lined or unlined.

Heat-Resistant Mitten
No. 14730—Made of special tanned leather—jumbo size for utmost in ventilation and coolness. Wool lined. Easy on and easy off.

Chrome Leather Gauntlet
No. 655—With palm patch—added protection without loss of flexibility. Wearing surfaces reinforced with steel ribbons. Thumb reinforced with patch and strap. Sewed with steel thread.

Industrial
GLOVES COMPANY

Main Factory
773 Garfield Blvd.
DANVILLE, ILLINOIS

STEEL GRIP

Branch Offices
In Detroit and Newark

(In Canada: SAFETY SUPPLY CO., Toronto)

welding will be appreciated.—Enso R. Frosini, Guidance Instructor, Vocational School of Greater Pittston Area, Pittston, Pa.

OCCUPATIONAL HAZARDS:

In rendering complete editorial service to industrial plants in this section, I find safety material is of exceptional value. The on-the-job safety material which I seek has to do with precautionary measures against getting caught in machinery which needs be open, against slipping on floors which of necessity contain grease, and similar types of accidents within industrial plants. Anything which will increase the safety consciousness of the workers will be of service to me in editing employee publications. — Teenus Cheney, Salisbury, North Carolina.

Suggestions and recommendations have been sent to the above three readers as requested.

Emergency Showers

OCCUPATIONAL HAZARDS:

On page 39 of your February issue of OCCUPATIONAL HAZARDS, I noted where Miss Patricia Snyder of Owens-Illinois Glass Company wrote to you in regards to names of manufacturers who make emergency fire showers. Would you be kind enough to mail me a list of these manufacturers?—P. W. Wimmer, Safety Department, Electro Metallurgical Co., Alloy, W. Va.

List forwarded as requested.

Carbon Tet

OCCUPATIONAL HAZARDS:

May I call to your attention Page 36 of your February issue on which appears an answer to a letter received from Franklin Finch of Kansas City.

We take exception to the answer given by your staff as being misleading with reference to carbon tetrachloride. — Charles H. Stephens, President, Buffalo Fire Appliance Corp., Dayton, Ohio.

Sorry. Left unsaid in our answer was that carbon tetachloride can be toxic in cramped quarters and similar conditions of poor ventilation. Also that quantity discharged into a given area is a factor governing toxicity. The phosgene gas may be formed only in combination with carbon monoxide in

No. 51/GN "VICTORY"
SAFETY CAP

Cool, comfortable light mesh or solid materials. Adjustable to all head sizes. Washable for longer service. Girls prefer them. It holds their hair in place without disturbing the hair-do.

CHOPPER'S MITTS

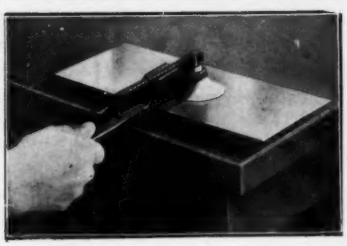
Heavy, tough first quality cowhide of consistent quality. Reversible for either hand. Steel sewed throughout.

WELDERS GLOVES

One piece back. Heavy heat resisting Chrome tanned cow-hide leather. Wing type thumb eliminates seam at point of wear. Lined back to stop heat. Welted seams. A glove made to serve on tough jobs.
Complete line of Work Gloves and mitts in all leather or leather palms with canvas back.

Write for prices—tell us your needs

V. E. Kennedy Company
5004 W. Burleigh St.
MILWAUKEE 10, WISCONSIN



SAFETY PARTS LIFTER

A production tool for lifting, feeding and positioning sheets in stamping machines and die-presses, without inserting the hands or fingers within the danger zone.

For rapidly transferring metal blanks from piles or stacks . . . many other uses on all non-porous materials, flat or curved surface.

SAVES FINGERS
SPEEDS WORK

WRITE FOR NEW BULLETIN H-57

IPCO
Safety Equipment for all Industries
INDUSTRIAL PRODUCTS COMPANY
2830 N. FOURTH STREET · PHILADELPHIA 33, PA.

4 out of 5 INJURIES
are caused by Human Failure!

To overcome the "human element" in accidents, take that factor into account in all safety work. And there is a "human approach" to safety -- through personal, individual recognition of performance.

Safety plans and procedures, based on award incentives, are now in successful use throughout the country. We'll be glad to work out a safety program for your purposes.

Write for free illustrated brochure.
"Safety Award Campaigns"

Award Incentives
INCORPORATED
160 Broadway • New York 7, N. Y.

"1001" Styles of Industrial Gloves to Save Workers' Hands

Suit the glove to the job — to cut your costs, step up production.

Check these features of the famous Olympic heavy duty work glove (No. 4004), typical of the outstanding Olympic glove line. Heavy leather palm and fingers made of the best side cow split leather . . . continuous one-piece canvas back reinforced with leather knuckle strap . . . full leather thumb . . . inside palm soft flannel lined . . . gauntlet strengthened with continuous leather puller. Many other styles available with leather palms and canvas backs. Economical, durable, styled for men or women, Olympic work gloves are used by hundreds of manufacturers wherever work stoppage or slowdown is threatened by hand injury. Remember—there's an Olympic glove for every industrial job.

FREE: —SEND FOR ILLUSTRATED CATALOG OF SAFETY WORK GLOVES, FINGER PROTECTORS AND SAFETY APPAREL

OLYMPIC GLOVE COMPANY Inc.
95 Madison Ave., Dept. 16, New York 16, N.Y.

the presence of heat, also under certain close conditions.

Press Guards

OCCUPATIONAL HAZARDS:

I would appreciate receiving more detailed information regarding the punch press guards pictured on Page 16, February, 1947, issue.—M. G. Gallup, Assistant Personnel Director, John Wood Mfg. Co., Inc., Muskegon, Mich.

Manufacturer, prices, etc., are being secured for you.

Back Issue

OCCUPATIONAL HAZARDS:

We would appreciate receiving the following material for our library: One copy of OCCUPATIONAL HAZARDS for September 1946. This is missing from our file. — Wilma Neuling, Librarian, Employers Mutual Liability Insurance Company of Wisconsin, Wasau, Wisconsin.

Issue supplied.

Three "E's"

OCCUPATIONAL HAZARDS:

Please send me the complete article, "The Three E's of Fire Protection and Prevention." — Grant T. Anderson, Fire Chief, Steep Rock Iron Mines, Ltd., Steep Rock Lake, Ontario, Canada.

Article forwarded.

Oxygen Data

OCCUPATIONAL HAZARDS:

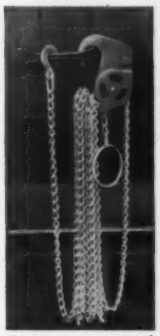
We are making a study of the reaction of people — particularly office workers — to the oxygen or lack of it in the air, and to methods of indicating the amounts of oxygen in the air. If you can, and will furnish us any data along these lines, we shall deeply appreciate your courtesy in writing us. Reference to other sources where additional information may be obtained will also be gratefully received. — M. C. Kennedy, Research Department, Library of Industrial Research, Chicago, Ill.

Data sources forwarded.

Position Wanted — Box 5471
Safety Engineer 20 years industrial experience desires permanent connection. National reputation as a leader and pioneer in safety. Agressive, fluent speaker and writer, organizer and administrator.

SAFER—FASTER
BETTER way to open balky box car doors !

MONARCH ONE MAN CAR DOOR OPENER



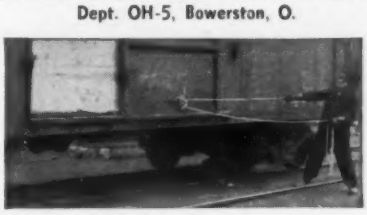
One man can open the most binding, balky box car door with the Monarch Car Door Opener. Get greater safety . . . speed loading and unloading schedules . . . order an ample supply to fill your needs today!

• No strained muscles. No slips or falls. No broken arms, legs or mashed fingers. No fatalities. No time wasted. No "gangs" needed. No time loss.

ONLY $22.50 EACH
F.O.B. Bowerston

Write for free descriptive literature.

MINING SAFETY DEVICE Co.
Dept. OH-5, Bowerston, O.



Dionol
FIRST THOUGHT IN MINOR INJURIES

Iodized Dionol . . . and Plain Dionol injury dressings have been used continuously by top industrial organizations for up to 20 years.

No reported Iodine burns under bandaging . . . Safe, rapid and effective healing . . . After infections almost unknown if instructions are followed . . . Decreased disability time loss. . . Write for information and samples.

The Q.V. Corporation
(Formerly The Dionol Co.)
Remington Building
KALAMAZOO 11, MICH.
OH-5-47

For further information on any of these products, simply list the key number at the foot of each item on the special post card enclosed with this issue.

FINGER RING CUTTER—Finger injuries due to the wearing of rings are surprisingly frequent and in many cases require painful moments to remove the badly bent ring before surgical repairs can be made or first

aid dressings applied. Industrial Products Company, Philadelphia, offers the Ipco Finger Ring Cutter, designed for quickly cutting the ring from the injured member. **NP 112**

SAFE FLANGE OPENER — The Persson Flange Jack is a new tool adapted for the safe, quick and easy opening of all types of flanged surfaces: sectional tanks, evaporators, condenser heads, valve bonnets, heat exchangers, etc. Made by the T. G. Persson Co., Bloomfield, N. J., the jack permits renewal by maintenance crews on either full face or ring

gaskets without damage to flange gaskets without damage to faces.

It replaces old hazardous hammer and chisel methods with no danger from sparks around flammable lines or near gas fumes, and with no exposure to wedges or chips **NP 113**

RUBBER-FRAME GOGGLE — A face-form goggle with a frame made from non-irritating, acid-resisting synthetic rubber has been announced by the American Optical Company, Southbridge, Mass. A single replaceable acetate lens is designed to protect workers against chemical and dust hazards and can be worn in conjunction with a respirator.

Featuring anti-fogging ventilation, the goggle is said to permit comfortable wear over ordinary prescription glasses. **NP 114**

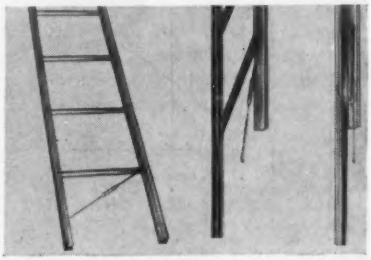
INDUSTRIAL STAIR TREADS — Cord construction for maximum service and corrugated surface for safety are features of Akro-Tread, a new

molded rubber stair tread. Fabric fibers similar to those which give strength and service life to automobile tires are employed. These extra tough cords are sprinkled throughout the rubber in the stair treads and are embedded in the rubber. **NP 115**

PROTECTIVE GARMENT — West Disinfecting Company announces a new Durma-Guard Apron made of polyvinyl-chloride-acetate. This plastic apron is said to afford protection against acids, alkalis, grease and oils, and other occupational hazards. The apron weighs 10 ounces and is cut to allow complete freedom of movement without hampering efficiency and gives protection with a minimum of weight. **NP 116**

FOLDING SAFETY SPECTACLE —Watchemoket Optical Company is offering for industrial eye protection "Stow-Aways"—a new, all-plastic folding safety spectacle. Featuring compact design, the semi-rimless type frame is hinged to fold at the bridge. A new type of hollow, stainless-steel temple telescopes to ⅓ normal length. The entire goggle folds to the size of a pack of cigarettes. **NP 117**

COLLAPSIBLE ALUMINUM LADDER—A new, lightweight completely collapsible ladder has been announced by the Gepfert Ladder Company, Cleveland. Made of aluminum tubing rungs and extruded section aluminum side rails, it weighs approximately 40% less than the conventional wood ladder. When not in use, the two side rails fold together and the rungs fit compactly within the extruded sections, making it easy to store and carry in close quarters.



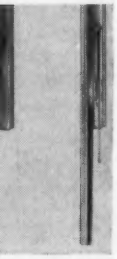
Ladders of this type are made in all the standard lengths—up to 28 feet—and can be of either the single or extension type. **NP 118**

OUTSIDE THICKNESS PIPE GAUGE—A new thickness gauge designed to determine dangerous corrosion inside pipes (iron or steel) by measuring the thickness from the outside has been announced by the Special Products Division of the General Electric Co. **NP 119**

TOTE TRUCK — A new truck called "Easy-Tote" used in the handling of tote pans which reduces manual effort to a minimum "without stoop, strain, or tug," has been announced by Easy-Tote Products, Inc., Arcade, N. Y.

The truck has a combination of features including a crank, hook, rigid handle and a tilting, low base plate. It is claimed that any worker can load, roll and unload these trucks

quickly and easily. Elimination of floor damage and wearing out of tote pans is an auxiliary benefit. **NP 120**



FIRE PROTECTION FOR INDUSTRY

A SECTION IN WHICH ARE PRESENTED THE VARIED SPECIALIZED PROBLEMS AND SOLUTIONS TO FIRE FIGHTING CONTROL AND PROTECTION IN INDUSTRY

Industrial Fire Picture of the Month—Too Late for Prevention ... 42
Plant Menace: Magnesium—Treat It With Respect ... 43
Assembly Plant Logic: Good Building Maintenance Needs Good Fire-Safety ... 44
Maintenance and Inspection Procedures — Water-Type Extinguishers ... 46
Protecting Oil Storage Tanks With Subsurface Foam ... 47

TOO LATE FOR PREVENTION —

Twisted girders, conduit, water pipes, handrails and a couple of wire baskets are all that remains of this Detroit factory gutted by a $125,000 fire. The cause? A machine spark in a pile of burlap bags is the story. The company fabricated automobile seat assemblies and kept burlap stock piles handy to production lines. A spark finds plenty of encouragement in a burlap stack. It's as hard to put out as fire in a bale of cotton, and has abundant air spaces to feed it oxygen. Give it five minutes start and it may start a five-hour fire. It flares out to adjacent combustibles, not spectacularly like a gas fire, but just as efficiently. Burlap needs sprinkler protection.

PLANT MENACE: MAGNESIUM
TREAT IT WITH RESPECT

By H. J. HORSWILL, Engineer
California Industrial Accident Commission

This very active chemical element should be handled with the proverbial "kid gloves" because there is a fire hazard wherever it is used.

THERE is a fire hazard wherever magnesium is used, and the hazard is aggravated by ignorance of the properties of the metal. Magnesium is a very light metal; lighter, in fact, than aluminum. Its specific gravity is 1.74; that of aluminum is 2.71. Consequently, it finds wide use in the airplane industry and its use seems likely to increase. Pure magnesium is seldom ever used. The metal is alloyed with aluminum, but these alloys are flammable just as magnesium is. For that matter, aluminum itself will burn if conditions are right. When an aluminum-magnesium alloy catches fire it burns completely; that is, the magnesium does not burn out and leave the aluminum. Both metals are consumed.

Form Important

The flammability of magnesium depends to some extent on the form it is in. Powder burns so fast that its combustion can almost be called an explosion. If the dust is suspended in the air, it does explode. On the other hand, a solid chunk of the metal would burn comparatively slowly. In between these two extremes come magnesium alloy castings and the turnings produced in machining the metal. The speed of combustion depends on the surface exposed to the air. For, in order to burn, magnesium and aluminum must be in contact with some source of oxygen.

Air is the usual source of oxygen, but hot magnesium decomposes water, liberating hydrogen, which also catches fire, and oxygen, which supports combustion. So, if anyone tries to put out a magnesium-aluminum fire by pouring water on it, he just makes everything worse. Of course, if you could get enough water on the fire to cool the metal to a near-room temperature, you might put the fire out, just by the cooling effect of the water. It is also true that you *might* be able to put out an ordinary fire by the cooling effect of gasoline. Don't try it, though.

Bomb Use

One of the commonly used incendiary bombs used for military operations are thermite bombs. Thermite is a mixture of aluminum and iron oxide. The thermite is confined in a case which is made of an alloy of magnesium with small amounts of hardening and strengthening material such as aluminum, copper, silicon, and other elements added. The advantage of this type of bomb is that the case will burn and add to the heat generated. The thermite filling burns quite fast and serves to ignite the magnesium alloy case which may continue its incendiary effect at 2700 degrees Fahrenheit for approximately fifteen minutes.

For a demonstration, a two-pound thermite bomb was set off on a half-inch steel plate above a bucket of water. The bomb not only burned through the plate and dropped into the water bucket but it burned through the bucket and the floor below.

Magnesium fires are very hot. The metal is used in incendiary bombs, for that reason, among others. Fires started in magnesium shavings spread very rapidly. Fortunately, it requires rather a high temperature to start the metal burning. It is doubtful whether or not a cigarette would start a pile of shavings burning, though it probably would set off ordinary commercial magnesium flashlight powder. It is possible to light magnesium with a match-flame, though it may take two or three tries. Welding operations are very likely to start metal fires, and are probably the source of most fires of this type.

While machining magnesium alloy parts at high tool speed and particularly with light cuts it is possible to generate enough heat at the cutting tool to ignite the magnesium. If such a fire is started and hot metal falls into the receptacle for catching the shavings it would probably damage the machine and possibly start a bad fire in the plant. This would depend upon the amount of the magnesium shavings present and the close proximity of other flammable material. Prevent the accumulation of alloy turnings, and if they do occur, keep fire away from any such piles.

Speed Essential

The next best thing is to put out a fire as quickly as possible. If the fire is a small one, the burning metal can be picked up in a shovel and dumped where it can do no harm. Or it can be slowly smothered with powdered talc or dry sand which are effective in slowing down combustion. Nothing containing water should be used.

Experiments made at the Vultee Aircraft plant in Los Angeles County indicate that neither carbon tetrachloride nor carbon dioxide will extinguish these fires because these fires can not be smothered.

One machine shop has already been destroyed by a fire originating in magnesium alloy turnings. Care is necessary if we are not to have more such accidents.

ant air spaces to feed it oxygen. Give it five minutes start and it may start a five-hour fire. It flares out to adjacent combustibles, not spectacularly like a gas fire, but just as efficiently. Burlap needs sprinkler protection.

Assembly Plant Logic:

Good Building Maintenance Needs Good Fire-Safety

By S. G. FRECK, Manager
Industrial Division
Walter Kidde & Co., Inc.

This GM assembly plant cannot turn out hundreds of cars each day without a well organized plan for controlling parts and materials. It might not turn out ANY cars without a thorough plan for controlling fire hazards.

IN RECONVERTING for peacetime automobile production, many manufacturers have taken a thorough look at their fire protection facilities and, wherever necessary, have brought them up to date—calling in fire protection engineers to evaluate the hazards and to make recommendations for adequate protection. They have found such precautions to be as essential to continued production as a fundamental requirement of good building maintenance.

One of the most interesting installations recently completed is the fire protection system for the huge dip tank at the General Motors assembly plant (BOP Division) at Linden, N. J. This dip tank provides a prime coat of paint for hoods, fenders, engine mounts and other chassis parts. Like other painting operations it is a fire hazard involving flammable liquids that give off volatile vapors which must be protected from fire by extraordinary methods.

The fire extinguishing method used to protect this dip tank—and its 17,000 gallons of prime paint—is an automatic carbon dioxide built-in system that totally floods the room housing the dip tank. Total flooding by carbon dioxide is the process employed to extinguish fire quickly in an enclosed space. The carbon dioxide, when released dilutes the oxygen content in every part of the enclosed area to a point at which combustion cannot be sustained. This smothering action is especially recommended for flammable liquid hazards, and an inert gas such as carbon dioxide holds general favor because it will not damage material or equipment.

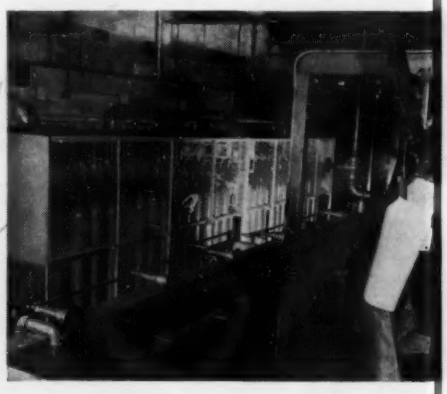
"Local Application" Bettered

Usually, dip tanks are protected from fire by what is known as "Local application" systems. Discharge nozzles are mounted at approximately three-foot intervals along the sides of the tank and so positioned that the carbon dioxide, when released, will cover the entire surface area of the tank with a quantity of gas. The tank is completely enclosed in a cloud of fire-killing carbon dioxide gas, no consideration being given to the rest of the room. At Linden, however, not only is the dip tank protected in this manner but the entire room in which it is housed (along with the drainboard) is thoroughly "flooded" with gas. Such protection offers a unique engineering problem since overhead conveyors carry the various automobile parts to and from the dip tanks through large openings in the room. In addition to openings for the conveyor belt there is a door used for entering the room. These openings are an obstacle to total flooding for during extinguishment additional oxygen could penetrate the room reducing the effectiveness of the carbon dioxide

To permit total flooding, these entrances have been "blocked' by two different and equally effective methods. The door leading into the room has been made self-closing. At the outbreak of fire the first rush of high-pressure carbon dioxide operates a pressure trip which allows the door to close. The entrances for the conveyor cannot similarly be sealed. However, the oxygen is held at bay at these two points by an intriguing method known as "screening". At each entrance there are shielded nozzles which, during the normal extinguishing period, shoot curtains of carbon dioxide across the openings to dilute the oxygen content of the air entering the room.

The system provides effective, total fire smothering. It operates from a self-sufficient and independent battery of carbon dioxide cylinders, steel piping, shielded nozzles and heat detectors, requiring no outside power of

Thinner and solvents used to clean agitators and paint buckets are protected from fire by totally flooding the cleaning room with carbon dioxide. Nozzles are strategically placed on the walls around the room.



Carbon dioxide nozzles stand guard over dip tank to smother fire within seconds after starting. The carbon dioxide is stored in 108 fifty-pound cylinders in background.

any kind. In the event of fire, the sudden heat rise sends a tell-tale pressure wave from the detector to the automatic release, located on the cylinder frame work. The operation of this release, in turn, discharges the fire-killing carbon dioxide gas which is kept under high pressure (about 750 pounds per square inch at 70° Fahrenheit) and in liquid form. When released, the carbon dioxide rushes under its own force through piping and out shielded nozzles that have been strategically placed around the room, over the dip tank and surrounding the conveyor openings. Upon leaving the nozzles the carbon dioxide reverts to its gaseous form (expanding to 450 times its stored volume) thus reducing the oxygen content of the air from the normal 21% to below 15% where combustion cannot be sustained.

Have 108 Cylinders

To protect this large room, 108 cylinders — each containing 50 pounds of carbon dioxide — have been provided. Fifty-four of these cylinders are used in the event of fire and the remaining 54 stand as a reserve supply to give constant protection during recharging of the used cylinders.

In a different section of the Linden assembly plant another carbon dioxide system, equally effective if not so spectacular, guards the cleaning room where agitators and paint buckets are thoroughly cleaned before re-use. The thinner and solvents used in the claaning operation are extremely volatile so extra precaution is needed for this process. A system similar to that protecting the dip tank room—although smaller in size—has been installed. It also operates automatically from rate-of-temperature rise detectors, uses eighteen 50-lb. cylinders (9 main and 9 reserve), is equipped with pressure trips to release 2 self-closing doors and a pressure switch to shut off the ventilating system.

Not only has General Motors provided engineered protection for these special fire hazards but the company has also furnished some 4000 hand extinguishers of all types — carbon dioxide, foam, water, carbon tetrachloride—to guard every portion of the building as completely as possible.

Don't Fiddle with Fire!

Get the ALL FIVE RANDOLPH Trigger-Touch Extinguisher!

1. EASE—One-hand operation, from bracket to fire. Randolph "4" means panic-proof protection

2. SPEED—Tests prove Randolph trigger-touch "10" stops 2-gallon gasoline fire in 10 seconds

3. SAFETY—Randolph CO^2 will not conduct electricity. And it's non-toxic . . . there's no danger from any poisonous fumes

4. NEATNESS—No mess or stain . . . no water or chemical damage with a new Randolph CO^2 trigger-touch extinguisher

5. EFFICIENCY—Randolph is ready for action under all temperatures. You have no freezing or deterioration to worry about

Randolph Extinguishers give you a truly great combination of features for full protection against most industrial fire hazards. Guard your property with the right extinguisher . . .

Send today for new free data guide to help you choose proper protection. ***Approved by Underwriters' Laboratories.***

RANDOLPH LABORATORIES, INC.

9 E. Kinzie Street Chicago 11, Illinois

WATER TYPE EXTINGUISHERS
ANTI-FREEZE SOLUTION EXTINGUISHERS

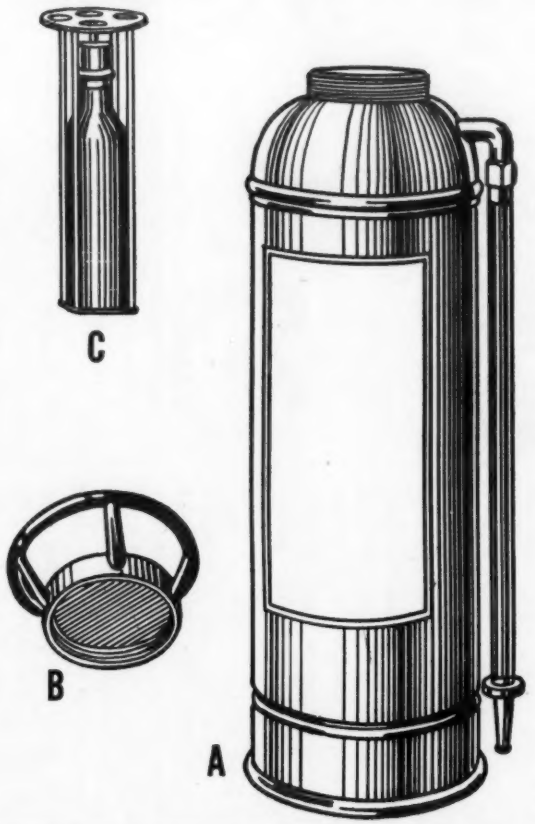
(2½ and 5 Gallons)

WHERE adequate maintenance is provided for extinguishers, savings are effected that help accomplish the maximum of fire extinguishment in the minimum of time and cost. A careful extinguished maintenance program should be organized. It should include periodic extinguisher unit inspections, regular scheduled recharging service, and records, dates and information on the inspections, discharges, recharging and materials used should be kept.

This handy chart (one of a series) summarizes the essential facts of maintenance of FOAM EXTINGUISHERS and furnishes a quick reference for inspection techniques. Modification should be made of information contained herein to conform with individual manufacturers' instructions usually found on exterior of extinguishers.

Water type extinguishers consist of a quenching agent which is plain water or an anti-freeze water solution (freezing point of 40 degrees F. below zero) with a calcium chloride base. Extinguishers using water or anti-freeze solution usually employ a carbon dioxide cartridge to provide pressure. When extinguisher is inverted and bumped on ground, carbon dioxide cartridge is pierced releasing the carbon dioxide gas which forces the water through the extinguisher hose. This type extinguisher is not recommended for use of connections with electrical equipment fires.

What to Check	WHAT TO DO
(A) Extinguisher Body	Extinguisher chamber should be thoroughly examined for any indications of deterioration. Wash and scrub interior of extinguisher shell with clean hot water and drain water through hose preparatory to recharging. Anti-freeze crystals supplied by manufacturer should be thoroughly dissolved in specified amount of warm water outside of the extinguisher body in strict accordance with instructions on extinguisher. Refill should measure to filling mark as indicated on extinguisher.
Hose Attachment & Nozzle	Thread connections on ring top neck should be checked and cleaned of any accumulation of corrosion. (The accompanying table for making anti-freeze solution is recommended by the NFPA.) Approx. Freezing Temperature — To Make 2½ Gals. Anti-freeze Solution Degrees Farenheit / Water / Calcium Chloride 10 — 2 Gals. 1 qt. — 5 lbs. Zero — 2 Gals. 1 pt. — 6 lbs. 4 oz. 10 below — 2 Gallons — 7 lbs. 6 oz. 20 below — 2 Gallons — 8 lbs. 6 oz. 30 below — 2 Gallons — 9 lbs. 2 oz. 40 below — 10 lbs. Examine hose and its connections for deterioration or injuries due to misuse or corrosion. Make certain that orifice of hose nozzle is not cloged by flushing a stream of water through hose and nozzle. Replace hose if cracked and not in useable condition. Replace nozzle with new one if not in perfect working order.
(B) Ring Top or Cap	Check ring top cap threaded connections for wear or corrosion. Check gasket for correct seat. Replace with new gasket if loose or worn by corrosion.
(C) Carbon Dioxide Cartridge	Carbon dioxide cartridge should be removed and weighed on an accurate scale to determine whether there has been a loss of pressure by leakage. If weight of cartridge is ½ ounce less than originally specified weight it should be replaced only by a new cartridge furnished by the extinguisher manufacturer.



WHEN	WHY
Each Month	This type extinguisher is usually hung on hangers or set on brackets not more than 5 feet above the floor for 2½ gallon size and three and one-half feet for the 5 gallon size. A routine check at monthly intervals will make certain that each extinguisher has not been tampered with or removed from its designated place.
Several Times A Year	At company prescribed intervals a general inspection should be made to detect any injuries to the extinguisher; to see that they are properly charged or that the hose nozzle orifice is not clogged. Check for proper tagging, date, and signature of last recharger to assure proper record of maintenance. Check location and supply of water, anti-freeze and carbon-dioxide cartridges for on-the-spot recharging if extinguisher is found empty. Instructions to employees should be given in order that through familiarity they may become adept at handling the extinguisher in event of fire. These instructions should be supplemented with frequent demonstrations.
At Least Once a Year	Water and anti-freeze solution extinguishers must be completely recharged after each use in order to provide new extinguishing pressure for subsequent use. The extinguisher and all of its parts should be examined (including gasket and hose) for signs of deterioration or injuries due to misuse; and orifice of the hose nozzle examined to see that it is not clogged. The carbon dioxide cartridge should be weighed and replaced if it shows loss of weight (½ oz. or more). Extinguishers and parts which are not in good condition should be replaced with those that will perform with maximum efficiency. It is important that in the replacement of the carbon dioxide cartridge that it be an exact duplicate of the one originally furnished by the manufacturer. At annual inspections, extinguishers should be recharged as needed. Recharging should be done under capable supervision and date of recharging and signature of person performing operation recorded on tag attached to each extinguisher to indicate operable condition and furnish reference for later check.

(Other handy bulletins covering first aid fire appliances will appear from time to time in the Fire Protecton for Industry Section. Watch for them. Clip and use for instant reference in your industrial fire prevention notebook.)

PROTECTING OIL STORAGE TANKS WITH SUBSURFACE FOAM

By J. K. McElroy, Staff Member
National Fire Protection Association

ONE of many post-war developments in the field of oil fire extinguishment is the use of foam in subsurface application.

Three different types of foam are now being used for fire-fighting purposes; one, the time-honored standby, chemical foam, which depends on a chemical reaction for its production of foam; two, the newer type, high-expansion, mechanical foam made by the mechanical agitation of air with a dilute solution of synthetic foaming agent; and three, the protein type, low expansion mechanical foams produced by a similar mechanical agitation, but using as a foaming agent a dilute solution of hydrolyzed natural proteins. The latter mechanical foam contains smaller amounts of air and larger amounts of water than the high expansion foams.

Oil Industry Leads

The oil industry, for many years progressive in fire prevention and fire control activities is taking advantage of subsurface foam methods of fire extinguishment.

In cooperation with the Standard Oil Company (Ohio), the Navy Department initiated a series of full scale tests using the subsurface application method applied to large storage tanks. These tests were conducted at the Moorehead tank farm at Findlay, Ohio.

The conclusions of the work at the Naval Research Laboratory and the large-scale fire tests conducted by the Navy using the subsurface method are given in a report No. P-2679 in which it is stated:

"(a) The subsurface injection method will efficiently extinguish crude oil or fuel oil tank fires using foam rates of .45 to a maximum of .75 gal. per min. per sq. ft. applied through one inlet or two if available.

"(b) The subsurface injection method will efficiently extinguish gasoline fires using similar foam rates, but a minimum of two points of injection on the tank if its size approaches 93 feet in diameter.

"(c) The subsurface injection method may be used on tanks whether partly full or completely full of fuel. The only factor introduced being an increased length of time of extinguishment in the case of a partly filled tank, due to wind currents.

"(d) The subsurface injection method requires apparatus and liquids of such design that a foam of controlled physical and chemical characteristics is produced.

"(e) The subsurface injection method requires only the addition of a branched "Y" connection with suitable valves on existing product line installations for foam introduction. This point may be at distances of 200 feet or more from the tank and may be well protected from the fire."

Fire protection engineers having large stocks of chemical foam compounds already on hand will be naturally interested in the possibilities of using chemical foam for subsurface injection instead of incurring an additional expense to equip their plants with mechanical foam fluid and equipment similar to that used by the Navy in these tests.

Private Industry Test

To answer such queries a full-scale subsurface test using chemical foam was run by a foam manufacturer on the same tank at Findlay used by the Navy in their tests. The results of this trial are best given in chronological form as follows:

Conditions of Test

Preburn—3 minutes.
Test Fuel—Crude oil.
Fuel Depth—16 feet, 4 inches.

Equipment Used

One Dual Powder Generator.
Topside Moeller Tubes (Two).

Operating Test Conditions

Foam Expansion—8.
Foam Application—2640 g.p.m.
Water Consumption Rate — 330 g.p.m.
Rate of Powder Consumption—1 can A plus 1 can B per minute.

Extinguishment Log

0 min.—Chemical foam applied, two inlet subsurface application.

3 min.—First indication of control.

7 min.—Changed to one inlet application.

10 min.—Fire burning heavily on west half of tank, opposite inlet.

12 min.—One-half of chemical foam unit plugged and unit shut down, complete ignition of tank surface resulted.

14 min.—Chemical foam unit again in operation.

17 min., 30 sec.—Chemical foam unit again plugged, pumpers shut down. Chemical foam abandoned.

19 min., 30 sec.—Emergency topside application mechanical foam unit with Moeller tube put into action.

20 min., 30 sec.—Second emergency topside application mechanical foam unit with Moeller tube put into action.

32 min., 28 sec. — Fire extinguished.

Total chemical foam subsurface

(Other handy bulletins covering first aid fire appliances will appear from time to time in the Fire Protection for Industry Section. Watch for them. Clip and use for instant reference in your industrial fire prevention notebook.)
gnisher to indicate operable condition and furnish reference for later check.
nished by the extinguisher manufacturer.
AZARDS

application—15 minutes.

Total mechanical foam topside application—13 minutes.

Water consumption of the two topside Moeller Tube Units — 480 g.p.m.

Foam fluid consumption of two Moeller Tube Units—28.8 g.p.m.

There are two basic requirements for the use of the subsurface injection method of extinguishment of oil and gasoline tank storage fires. First, an adequate water supply must be available. Second, pressure foam-making apparatus of adequate capacity with the necessary foam fluid must also be available.

The provision of foam makers which will operate against high hydraulic heads is no longer a bar to the use of mechanical foam. The development program in both Britain and America in the manufacture of foam makers, whether by aspiration or air compression, has progressed to the point where procurement of the necessary apparatus is presently possible or will be possible in the near future.

Under the present test conditions mechanical foam has certain advantages over chemical foam whether used in topside or subsurface application. However, mechanical foam facilities must be as carefully designed and engineered as other types of foam systems if they are to give comparable protection.

Fewer men are required to operate well-designed mechanical foam makers, hence there is less likelihood of confusion, which should tend to reduce the possibility of interruption of service. The weight of mechanical foam fluid required for a given volume of water is much less than the weight of dry chemicals required, hence less material need be stored and transported to the scene of the fire.

The subsurface method of extinguishment through product lines is less subject to external damage than topside installations and will result in greater personnel protection.

STOP FIRES
before they start!
Shield of Safety identifies PROTECTOSEAL Since 1923
PROTECTOSEAL*
PLUNGER CAN ... provides safe — speedy way of dispensing flammable liquids ... steps-up production and economizes solvents. A boon to all cleaning and swabbing operations. Available in 5 sizes ... F.M. approved.
• PROTECTOSEAL — a method of safeguarding your plant against destruction — loss of life, property, and profits. Write for catalog covering many other devices safety-engineered to stop fires before they start.
THE PROTECTOSEAL CO., 1970 S. WESTERN AVE., CHICAGO 8, ILL.

Advertisers' Index

	Page
American Air Filter Co.	11
American Mat Corp.	37
American Optical Co.	2
Award Incentives, Inc.	39
Bausch & Lomb Co.	9
Chicago Eye Shield Co.	15
M. E. Cunningham Co.	31
Dayton Ladder Mfg.	27
Dobbins Mfg. Co.	31
Dockson Corp.	26
C. B. Dolge Co.	37
Finnell System, Inc.	4
General Detroit Corp.	Inside Back Cover
General Electric Corp.	8
Gerson-Stewart Co.	27
Gro-Cord Rubber Co.	23
Hillyard Co.	22
Hood Rubber Co.	30
Industrial Gloves	38
Industrial Products Co.	38
International Shoe Co. (Hy-Test Div.)	7
V. E. Kennedy Co.	38
Kirk & Blum Mfg. Co.	Inside Front Cover
Lehigh Safety Shoe Co.	12
Thom McAn Safety Shoes	3
Milburn Co.	35
Mining Safety Device Co.	39
E. R. Moore Co.	28
Olympic Glove Co.	39
Pioneer Rubber Co.	28
Protectoseal Co.	48
Q. V. Corporation	39
Randles Mfg. Co.	10
Randolph Laboratories Inc.	45
Regal Mfg. Co.	31
Rose Mfg. Co.	34
Schmieg Industries	36
Stonehouse Signs	6
Sugar Beet Products, Inc.	16
Surety Rubber Co.	35
Tarbonis Company	30
Welsh Mfg. Co.	19
West Disinfecting Co.	1

in advan-
whether
ace appli-
ical foam
efully de-
ther types
re to give

to operate
oam mak-
elihood of
end to re-
terruption
nechanical
given vol-
than the
required,
be stored
ne of the

d of ex-
duct lines
l damage
and will
protection.

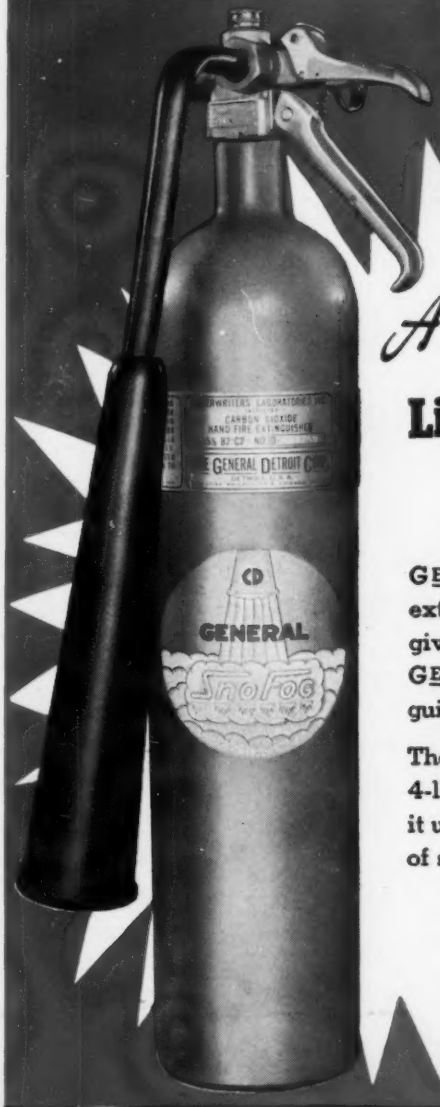
ndex

Page
11
37
2
39
9
15
31
27
31
26
37
4
Back Cover
8
27
23
22
30
38
38
Div.) 7
38
Front Cover
12
3
35
39
28
39
28
48
39
10
45
31
34
36
6
16
35
30
19
1

HAZARDS

5 for 4

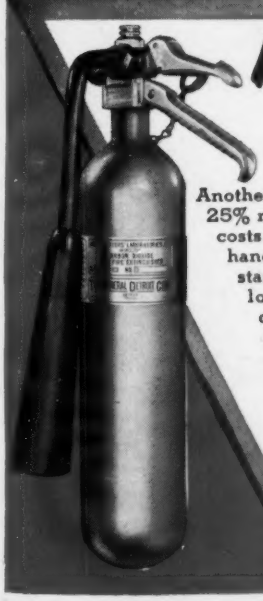
A New Addition to GENERAL'S Line of CO2-SnoFog Carbon Dioxide Extinguishers



GENERAL'S new 5-lb. CO2-SnoFog carbon dioxide extinguisher costs no more than the 4-lb. size—yet gives you 25% more fire protection. This makes GENERAL CO2-SnoFog the best buy in the fire extinguisher market—best for protection; best for economy.

The new 5-lb. GENERAL CO2-SnoFog fits the standard 4-lb. wall bracket. Improved design of the shell makes it unusually light and easy to handle, with no sacrifice of structural strength.

IF IT'S GENERAL IT'S DEPENDABLE



New 2½-lb. Size, Also!

Another new CO2-SnoFog—2½-lb. size—gives 25% more fire protection than the 2-lb. size, yet costs the same. It is light, strong, and easy to handle, due to improved shell design—an outstanding value. See the yellow section of your local telephone directory for your nearest GENERAL dealer. Ask him to show you both these new CO2-SnoFog extinguishers, or write for complete details.

Service For You . . .

Through GENERAL'S Distribution System

To assure you immediate service, GENERAL maintains a nation-wide network of 20 branch offices and warehouses. There is one near you. Call your local GENERAL representative for advice and counsel on all your fire protection needs, or write direct.

THE GENERAL DETROIT CORP.

Manufacturers of Fire Extinguishers
Motor Fire Apparatus and Allied Equipment

2270 E. JEFFERSON • DETROIT 7, MICHIGAN

NEW YORK • PHILADELPHIA • ATLANTA • CHICAGO • DALLAS

West Coast Subsidiary: The General Pacific Corp.

Los Angeles San Francisco Denver Seattle

Distributors in Principal Cities

*** OCCIE HAZZ Says:**

"It may take two to make a quarrel, but IT TAKES ONLY ONE MAN TO MAKE AN ACCIDENT. Sometimes he gets hep after the first mishap, and sometimes he needs help forever after."

* Our Cracker-Birrel Expert.

OCCUPATIONAL HAZARDS Magazine Helps You

"GET HEP" ON ACCIDENTS — BEFORE They Happen . . . Helps You

"GET HEP" ON HEALTH — While You Still Have It . . . Helps You

"GET HEP" ON FIRES — BEFORE They Start!

PREVENTION Is Our Watchword: Look For It This Month in These Features—

"AND SUDDEN INJURY" . . . Graphic Chapters in Industrial Life . . . "True Story" for Safety Engineers.

"PRESS-PROOFED PREVENTION" . . . Clippings from the Nation's News Columns . . . The Story Behind Accidents and How to Avoid Them.

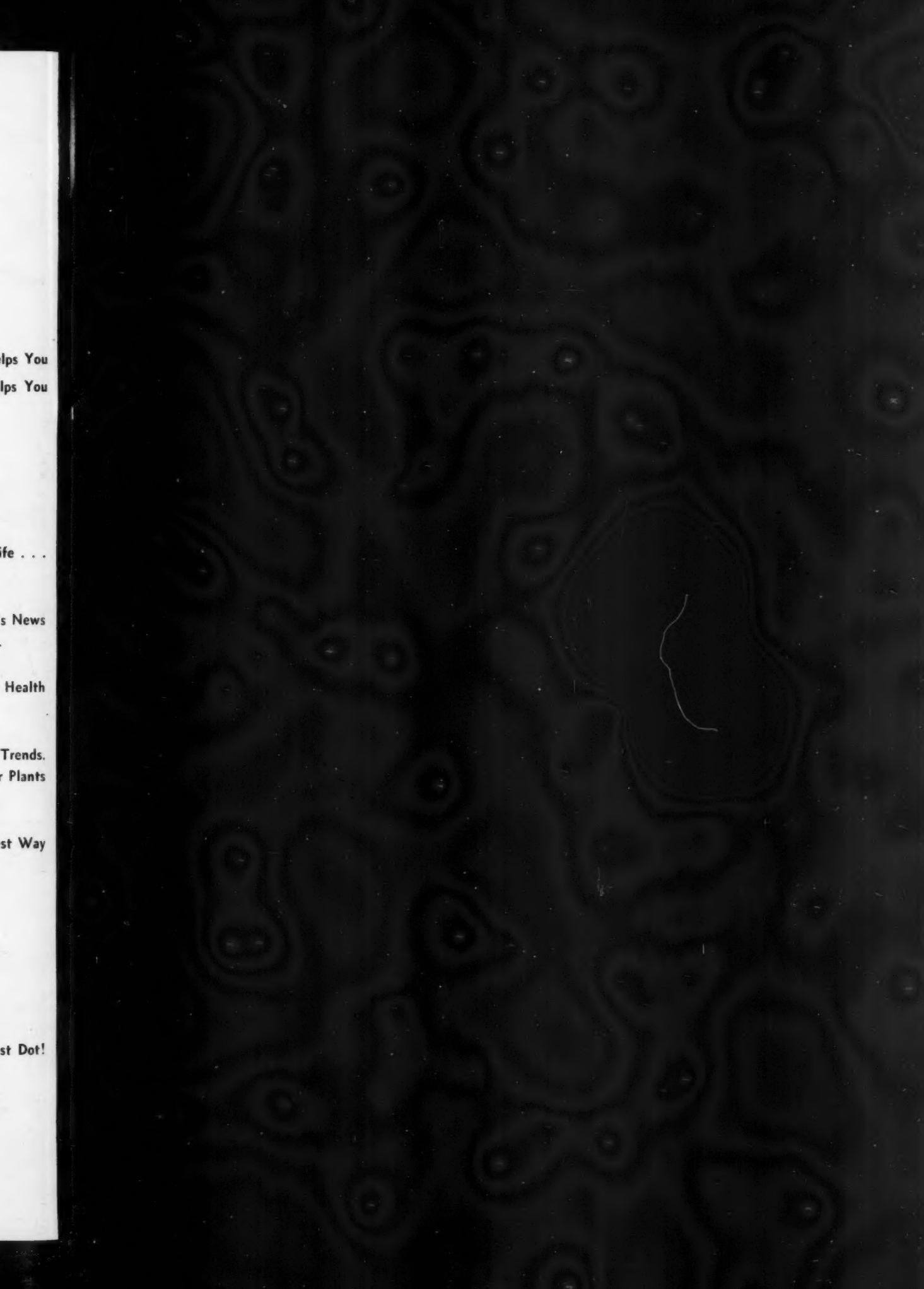
"TECHNICAL DATA FILE" . . . A Storehouse of Information on Health Hazards.

"RIGHT OFF THE DOCKET" . . . The Legal Front in Compensation Trends. "THE PAY OFF" . . . "PLANT PICTURE STORY" . . . How Other Plants Have Made Safety Pay.

"MAINTENANCE CHART FOR FIRE APPLIANCES" . . . The Best Way To Keep Them Working.

Plus . . . . . .

Special Articles Written by Experts in the Field on —

POWER PRESS SAFETY
MAGNESIUM
HEALTH PROGRAMS
SUBSURFACE FOAM

And Many More . . . Good to the Last Dot!